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THE IRON TRADE REVIEW

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Prices Await Government Adoption

Development of Stabilizing Movement and Expected Benefits Held Back by Failure of Federal Department to Make New Schedules Basis of Purchases—Administration Influence Invoked—Pig Iron Production Still Declines

WHILE leading government departments withhold their positive acceptance of stabilizing price agreements, the iron and steel industry finds itself committed to reductions yet unable to realize fully their expected benefits. Events connected with the further development of the readjusting movement have set the stage where definite and complete government co-operation is immediately essential to the material success of the plan. The railroad administration especially has been put by the demands of the coal industry in a position where it must commit itself clearly as to purchasing policies or put itself in the position of jeopardizing the whole stabilizing program. The word of the President himself may be necessary to clarify the situation and it is understood appeals to him along this line already have been dispatched by various government officials. In the meantime the marking down of basic materials other than iron and steel is making little progress.

A session by the cabinet with officials of various government departments and the industrial board was held at Washington, Wednesday. It is indicated that every possible effort is being made to line up government agencies to accept the agreed prices.

Market Is Livelier

Enlargement of the general buying of steel products as contrasted with that of several weeks past more plainly is shown. Yet manifestly there still is lacking a freedom in forward purchases which would denote a complete confidence of buyers in the new price levels. It is apparent that this may be expected to come only by a very gradual process. The best buying has been shown in bar mill products, sheets and those lines where the influence of the automobile industry is strongest. Structural steel inquiry is much better. Manufacturing users have been closing good tonnages of wire for six months ahead. Export prospects continue to brighten. Brazil is in the market for a large amount of railroad equipment.

Seek Lower Ore Price

An effort to get lower lake ore prices is being made by merchant pig iron producers as an offset to what it is insisted was a disproportionate reduction on their product. Just how a reduction in ore would accord with the socalled minimum basis of present prices is not clear. Ore producers have not committed themselves finally on this proposal. In the meantime, the opening of the 1919 buying season in ore is hanging fire.

It is possible this attempt to lower ore charges may be related to the question whether the reduced pig iron price finally is to be made retroactive as to old orders on furnace books. While iron producers generally are opposed to revising book tonnage, their position has been shaken by the action of the leading Chicago seller in extending this accommodation to his customers. Two large southern steel works interests have done likewise on their old orders for foundry iron and it is reported this allowance has been made in the Pittsburgh territory by other sellers. Pig iron inquiry and sales have been a little better the past week. Competition already is tending to bring about an equalization of price discrepancies caused by diverse basing points. One Virginia producer has given up the regular Birmingham for Pittsburgh base in order to be on a parity with northern producers.

Iron Output Drooping

Curtailment of pig iron production during the first quarter of the year is represented by 64 stacks as shown by the completed March statistics. In the last month 24 furnaces were blown out. The average daily output in March was 98,555 tons compared with 105,120 tons in February. It is significant that the decline in merchant iron output amounted to 11 per cent as compared with 4 per cent in steelmaking metal. Total production in March showed a small increase over February due to the extra working days and amounted to 3,067,610 tons compared with 2,943,347 tons.

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Government Tool Situation Precarious

COINED of the war, the phrase "fed up" denoted the British Tommy's attitude after three years of conflict. This now aptly describes the state of mind of those machine tool builders who have been approached by the government or who have approached it with reference to the disposal of government-owned equipment. Dilatory tactics of ordnance department lieutenants and others with limited authority have so disgusted these manufacturers that they fast are approaching a decisive frame of mind. If this condition is further needlessly prolonged, it is possible they may allow the whole thing to go by the boards, demand settlement of their bills and then the government will be faced with the necessity of disposing of these tools without the aid of makers and dealers. Since the latest inventory shows the equipment has a value in excess of $150,000,000, this would represent a large program for those unfamiliar with the vagaries of the machine tool market.

This feeling among builders is growing because of the difficulty in obtaining anything definite out of Washington. One government department seems to be working at cross purposes with another and the red tape involved is endless. As one dealer who endeavored to buy a machine from a district ordnance department expressed it: "Before you fellows get the necessary blanks, affidavits, forms, schedules, invoices, etc., filled out, the machine is obsolete and a new model has been issued by the maker."

It is stated that the equipment from a Chicago plant on which the government asked bids, is to go to the Rock Island arsenal for use and storage against future needs and that the bids were returned unopened. A well founded report has it, however, that up to the time set for bids to be received, none had come in and it was necessary for the government to find a berth for the equipment. Sellers of machinery are becoming more and more chary of requests for bids on government-owned equipment, for the reason that their bid might represent the market value of the tool to them and yet be far in excess of an acceptable price. Outside of the matter of shrewd buying, however, is the item of time involved and much of this valuable element is being lost in dealing with the government's material disposal section as at present constituted.

Whether or not the contract formulated at a meeting of toolbuilders with the government officials recently at Washington will be a successful solution of the problem remains to be seen. It is viewed with some misgivings, however, due to the fact that the government has repeatedly set aside its semi-agreement with makers to dispose of this equipment through them and has acted as salesman direct in many instances. What would seem to be most needed in Washington is some sort of a central clearing house, apprised of governmental tool requirements in all departments. It should also have a thorough knowledge of all tools the government possesses, where they are located, etc. It then would be in a position to cancel government needs with tools on hand. It should have vested in it, the power to authorize the sale at the prevailing market of all excess tools, through dealers and make purchases through the same medium to supply other tool needs not met from government stores.

The time has come when some definite and businesslike policy must be adopted and maintained if satisfactory results for all concerned are to be obtained. The government owes this much at least to the industry for the very effective co-operation it enjoyed from it during the war.

"Humanizing" American Industry

CLOSER personal contact between management and men is recognized as one of the most important requirements in industry if distrust and trouble are to be avoided and confidence established as the basis for successful effort and enterprise. It generally is understood that the workingman must be given opportunities for obtaining a better understanding of his employer's position and

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the employer must strive to get the viewpoint of the worker, but circumstances do not always favor such a mutual exchange.

By the very nature of his position and responsibilities, an employer of a large number of men cannot always get in touch with the individuals; it is only as those entrusted with the active management of an organization interpret his personality that "personal" relations are established. It is all right to advocate the "humanizing" influences of personal contact between an employer and employe, and to picture the employer fraternizing with the men in overalls, but in practice in large industrial institutions such as we have today, it is no more practicable than it would be for a general to discuss his campaign with his recruits, or for the engineer of an express train to swap yarns with the brakeman back in the caboose. However, it is practicable and extremely important that where employers wish to be absolutely fair and wish to surround their men with all the uplifting influences possible that those immediately in charge understand fully their responsibility to employes as well as employers. This is to make the man at the machine feel that he knows and understands and has confidence in the persons for whom he really is working, although, perhaps, he may never have seen them. It is in line with this necessity that labor representation plans have been adopted by some corporations, that councils have been established in some industrial plants and other means have been taken to insure the worker fair treatment, to guarantee to them what the heads of the institutions, the stockholders and the officials, wish that they should have, a square deal.

Recently a new movement has developed intended to carry out this idea still further. Elsewhere in this issue of THE IRON TRADE REVIEW is narrated how a group of men who served the government as speakers in the shipyards during the war are extending this work to all kinds of industrial plants. In speaking in the shipyards the chief obstacle to 100 per cent production, the speakers found, was the suspicion on the part of the workers that they were not getting their share of the profits. They found that any appeal made by the management failed to obtain response; they concluded that the men could be appealed to with better results by men who were in no way identified with the employers. They went before the men on the broad platform of Americanism and the results obtained justified the government's confidence in the success of the plan. The workers realized that their interests, their employers' and the country's were identical.

When radical socialism and bolshevism came to the fore as a menace to industry the industrial speakers decided that what was needed was plain, common sense, heart-to-heart talks with the workingmen. They have translated this conviction into a systematic effort. As a result a new and somewhat original method is presented to management and men by which they may reach common ground. This plan aims to promote mutual understanding in a humanizing way between employers and employed and is a cheerful counter influence in these days when the blatant preacher of discord has so large an audience.

Working Down Machinery Prices

AN important step in the readjustment of the machine tool industry has been taken recently in the reduction of 15 per cent in the price of shapers and 20 per cent in the price of planers. This constitutes the first instance of concerted action on the part of machine tool builders in the matter of prices and undoubtedly presages similar action in the relatively near future in other lines of equipment. By taking this step machine tool manufacturers are going a long way in meeting the expectation of buyers.

For weeks these latter interests have been holding off. With the passing of the abnormal demand created by war, they have awaited and expected the lowering of prices as a natural development. At the same time, with business generally in the chaotic condition of the past few months, they have and could in many instances well afford to hold off, at least until the time arrived when an outlet would be afforded their own products. Consequently, with indications now pointing to a revival of commerce and industry generally, the action being taken at this time by machine tool builders is exceedingly timely.

There has been doubt expressed in some quarters as to whether any reduction that may be made at this time would be sufficient to bring about the desired results. In answer to this it may be stated that buyers generally realize that the costs of labor, the determining factor in a material price reduction, have in no way been lowered, and that there is little likelihood of such a development in the near future. Furthermore, it is realized that machine tool builders, despite a lower market on iron and steel, still have much high priced raw material on hand. A concrete reply may be found in the resale of approximately $1,000,000 worth of machine tools at Indianapolis recently, the prices ranging from 72 to 78 per cent of the cost of similar new tools. This average was better than anticipated, and reflects a willingness on the part of buyers to go part way. With the gap thus being narrowed, as all signs appear to indicate, it would seem indeed as if active trading in machine tools is not far off.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 930

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, Pittsburgh	27.15
Basic, valley	25.75
Basic, delivered eastern Pa.	29.65
Basic, Buffalo, furnace	25.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25
Malleable, delivered eastern Pa.	31.15

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern	2.25 to 2.75
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25
No. 1X, eastern delivered Phila.	$33.65
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Cleveland furnace	27.75 to 28.15
No. 2 foundry, Ironton furnace	26.75
No. 1 foundry, Chicago furnace	28.00
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	31.90
No. 2X, eastern, N. J. tidewater	31.00 to 32.40
No. 2X foundry, Buffalo furnace	28.00
No. 2 foundry, del. Philadelphia	30.65
No. 2 foundry, N. J. tidewater	29.75 to 31.15
No. 2 southern, Birmingham	28.06
No. 2 southern, Cincinnati	31.60
No. 2 southern, Chicago	33.00
No. 2 southern, Phila.	34.50
No. 2 southern, Cleveland	33.00
No. 2 southern, Boston	36.00
No. 2 southern, St. Louis	32.25
Virginia, No. 2X, furnace	30.50
Virginia, No. 2X, Philadelphia	34.50
Virginia, No. 2X, Jersey City	35.00
Virginia, No. 2X, Boston	36.00
Gray forge, valley, Pittsburgh	27.15
Gray forge, eastern Pa.	29.65
Silveries, 8%, furnace	40.25
Ohio Silveries, 8%, Chicago	43.55
Tennessee Silveries, 8%, Chicago	44.25
Low phos. standard, Phila.	46.75
Low phos. Lebanon, furnace	43.75 to 45.75
Low phos. standard, Pittsburgh	47.15
Charcoal, Superior, Chicago	38.70

Coke

(At the ovens)

Connellsville furnace	$4.00 to 4.25
Connellsville foundry	4.75 to 6.00
Pocahontas furnace, nominal	6.00 to 6.50
Pocahontas foundry, nominal	6.50 to 7.50
New River foundry, nominal	8.00
New River furnace, nominal	7.50 to 8.00
Wise county furnace, nominal	6.00
Wise county foundry, nominal	6.50 to 7.00

Ferroalloys

Ferromanganese, 80 per cent delivered	$130.00 to 150.00
Spiegel, 16 to 20 per cent furnace, spot	40.00 to 45.00
Ferrosilicon, 50 per cent, spot and contract, delivered	125.00 to 135.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Youngstown	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	55.00
Forging, Philadelphia	55.00

SHEET BARS

Open-hearth, Pittsburgh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	$41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars soft steel, Philadelphia	2.595c
Bar iron, refined, Phila.	2.595c
Bar iron, common, Chicago	2.82c to 2.92c
Bar iron, common, Cleveland	2.62c
Bar iron, refined, New York	2.62c
Bar iron, common, Pittsburgh	2.75c
Bar iron, refined, Pittsburgh	4.75c
Hard steel bars, Chicago	2.80c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	45.00 to 50.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	2.45c
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.35c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c

Wire Products

(Per 100 lbs. to jobbers; retailers 5c more)

Wire nails, Pittsburgh	3.25c
Plain wire, Pittsburgh	3.00c
Galvanized wire, Pittsburgh	3.70c
Barb wire, painted, Pitts.	3.40c
Barb wire, galvanized, Pitts.	4.10c
Cut nails, Pittsburgh	4.445c
Coated nails per count keg, Pitts.	2.85c
Polished staples, Pittsburgh	3.40c
Galvanized staples, Pittsburgh	4.10c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	7.25c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

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Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	$59.80
Six-inch and over, Chicago	56.80
Four-inch, New York	60.70
Six-inch and over, N. Y.	57.70
Four-inch, Birmingham	56.00
Six-inch and over, Birmingham	53.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Shafting, Pitts., carloads	28 off list
Cotton ties, per bundle	nominal

Rivets

Structural rivets, Pittsburgh	3.70c
Boiler rivets, Pittsburgh	3.80c
Rivets ⅞ in. and smaller Pitts.	65-10-5 off

65-10-10 off.

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅝ x 6 inches, smaller and shorter)

Rolled thread	60–5 off
Cut thread	50–10–5 off
Larger and longer	45–10 off

MACHINE BOLTS

(⅝ x 4 inches, hot pressed nuts)

Rolled thread	60–10–5 off
Cut thread	60–5 off
Larger and longer	50–10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70–10 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	80 off
Gimlet and cone point lag screws	65–5 off

NUTS

Hot pressed, square blank	3.25c off
Hot pressed, square tapped	3.00c off
Hot pressed, hexagon blank	3.25c off
Hot pressed, hexagon tapped	3.00c off
Cold pressed, square blank	3.25c off
Cold pressed, square tapped	3.00c off
Cold pressed, hexagon blank	3.25c off
Cold pressed, hexagon tapped	3.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Quotations on leading products April 2, average for March, 1919, average for January, 1919, and average for April, 1918. Prices are those ruling in the largest percentage of sales at the dates named.

	Prices Apr. 2, 1919	Average prices Mar., 1919	Jan., 1919	April, 1918
Bessemer, valley del., Pittsburgh	$29.35	$32.55	$33.60	$36.15
Basic, valley, del., Pittsburgh	27.15	30.35	31.40	32.95
*No. 2 Foundry, Pittsburgh	28.15	29.85	32.40	33.95
*No. 2 Foundry, Chicago, furnace	26.75	29.95	31.00	33.00
Lake Superior charcoal, Chicago	38.70	38.70	38.70	37.50
Malleable, valley	27.25	31.85	32.90	34.45
Malleable, Chicago	27.25	30.45	31.50	33.50
**Southern, No. 2, Birmingham	28.00	31.20	32.25	33.50
*Southern Ohio, No. 2, Ironton	26.75	29.95	31.00	33.00
Basic, eastern del., eastern Pa.	29.65	32.85	33.90	32.00
**No. 2X Virginia, furnace	30.50	31.65	35.25	33.50
**No. 2X, eastern del., Philadelphia	31.90	35.10	36.15	34.25
Ferromanganese, 80 per cent, delivered	130.00	140.00	217.00	*250.00
Bessemer billets, Pittsburgh	38.50	42.25	43.50	47.50
Bessemer sheet bars, Pittsburgh	42.00	45.75	47.00	51.00
Open-hearth sheet bars, Pittsburgh	38.50	45.75	47.00	51.00
Open-hearth billets, Pittsburgh	42.00	42.25	43.50	47.50
Steel bars, Pittsburgh	2.35	2.61	2.70	2.90
Steel bars, Chicago	2.62	2.81	2.97	2.90
Iron bars, Philadelphia	2.595	3.005	3.745	3.50

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. *70 per cent.

	Prices Apr. 2, 1919	Average prices Mar., 1919	Jan., 1919	April, 1918
Iron bars, Cleveland	$3.07	3.16	3.32	3.64
Iron bars, Chicago mill	2.55	2.86	3.13	3.50
Beams, Chicago	2.72	2.89	3.07	3.00
Beams, Pittsburgh	2.45	2.71	2.80	3.00
Beams, Philadelphia	2.695	2.958	3.045	3.185
Tank plates, Pittsburgh	2.65	2.91	3.00	3.25
Tank plates, Chicago	2.92	3.15	3.27	3.25
Tank plates, Philadelphia	2.895	3.155	3.245	3.435
Sheets, blk., No. 28, Pittsburgh	4.35	4.61	4.70	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.81	3.90	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.96	6.05	6.25
Wire nails, Pittsburgh	3.25	3.43	3.50	3.50
Connellsville furnace coke	4.00	4.00	5.85	6.00
Connellsville foundry coke	5.00	4.81	7.00	7.00
Heavy melting steel, Pittsburgh	16.00	14.60	20.80	29.00
Heavy melting steel, eastern Pa.	16.00	14.25	19.00	28.30
Heavy melting steel, Chicago	16.50	15.25	19.20	28.65
No. 1 wrought, eastern Pa.	21.50	24.00	29.80	34.00
No. 1 wrought, Chicago	18.50	17.65	23.20	33.50
Rerolling rails, Chicago	17.50	16.30	22.30	34.00

(FOR ADDITIONAL PRICES SEE PAGE 930)

Pig Iron Market Revives Slightly

Inquiries and Sales Better Though Total Tonnage is Exceedingly Small—Chicago and Southern Producers Make Contract Retroactive and Other Makers Struggle With Question—Virginia Maker Quoting on Pittsburgh Base

Philadelphia, April 1.—Virginia foundry pig iron is being offered in Philadelphia territory on a Pittsburgh basis. This tends to upset the Birmingham basing point arrangement for Virginia iron. As a result Virginia foundry iron from one furnace is obtainable by eastern consumers at the same delivered price as eastern Pennsylvania iron, or $30.65 for the base grade. The producer making these offers states that the change was made necessary by the fact that quoting on a Birmingham basis effectually would bar Virginia iron from obtaining any business in the north. This method of quoting involves a nominal cut in price on this Virginia brand of $2.60 delivered at Philadelphia; $3.40 at New York; and $3.70 at Boston. Other Virginia makers still are quoting the Birmingham base, but at least one other interest expresses a willingness to depart from this price method if the business justifies. Two Juniata furnaces, taking a $2.80 freight to Philadelphia, which have been quoting on a furnace basis have reconsidered and now are naming the Pittsburgh base. All furnaces in that district with one exception now have adopted the Pittsburgh base and this stack practically has decided not to offer any iron for the present. Therefore, with the exception of a western Pennsylvania furnace, which takes a rate to Philadelphia of around 50 cents less than the Pittsburgh rate, the lowest priced iron now obtainable in this territory apparently is $26.75, Pittsburgh, for base grade. All eastern Pennsylvania furnaces not offering iron on this basis are quoting its equivalent. Feeling in the market is much better owing to improved inquiry. Actual sales total more than 2000 tons, including 500 tons of low phosphorus for the Chicago district, and one lot of 500 tons, another of 400 tons and various smaller orders of foundry iron. The Stanley G. Flagg Mfg. Co., Philadelphia, has asked for 600 tons of special basic and 400 tons of foundry; Bartlett-Hayward & Co., Baltimore, are seeking 500 tons for May-September delivery; and the Newport News Shipbuilding & Dry Dock Co., 200 tons of foundry. There are other domestic inquiries and export lots total several thousand tons.

Uncertainty Still Prevails

New York, March 31.—When pig iron prices were reduced 10 days ago it was expected in the trade that previous doubts and uncertainties would be removed. Such uncertainty however, seems to prevail at present to an even greater extent than before the reduction. Whereas it was expected in some quarters that a considerable volume of business would be released, there has been practically no buying since the reduction. Some small inquiries have come out, but in most cases it seems the consumer is interested only in finding out whether the market is at bottom. Several consumers say they can buy foundry iron at less than the present schedule. One consumer says he can buy No. 2X iron at $27, Buffalo. Careful inquiry among furnaces fails to corroborate such reports since all eastern furnaces claim to be observing the new schedule as minimum. Some makers, however, state unless buying picks up, and there is a material curtailment of production, it is only a question of time before prices go still lower. The possibilities of the situation, as one maker points out, are revealed by the fact that the iron which consumers have in their yards or on order is sufficient to last them in most cases to July 1, and in many cases through the third quarter. The announcement that Pickands, Brown & Co., Chicago, will apply the new prices to contracts on their books has caused considerable agitation in eastern pig iron circles, but so far there has been no indication similar action will be taken by eastern furnaces. One maker says: "The continued application of reduced prices to old contracts completely nullifies the efforts we have made in recent years to establish pig iron contracts on a binding basis. The sellers themselves seem to be doing all they

can to stimulate the belief among consumers that a contract is good only when it is in the buyer's favor." In some quarters, however, there is a disposition to believe consumers are justified in requesting lower prices in connection with old contracts. One merchant puts it this way: "If the furnaces refuse to apply the reduction in prices to unfilled contracts they are doing what is equivalent to penalizing their regular trade, since the man who showed his confidence in the furnace by placing his order would have to pay $4.25 more per ton than the man who refused to buy until prices were reduced. The present situation is unprecedented, and we are not going to return to normal until stocks of pig iron are liquidated. This involves considerable loss which should be shouldered neither by furnace nor by consumer alone, but by both." Although very few new export orders are being received opportunities to arrange for vessel space are resulting in numerous shipments on old orders.

Inquiries Are Fair

Pittsburgh, April 1.—A fair number of inquiries for pig iron, chiefly foundry, have come before makers during the past week or so, but actual sales have amounted to little. Among the tonnages sought are 3500 tons of No. 2 foundry for the Louisville, Ky., plant of the Standard Sanitary Mfg. Co. for delivery over this month and next. A sale of 500 tons of No. 2 foundry has been made to an Ohio consumer at $26.75, valley furnace. Brokerage interests are seeking approximately 1500 tons of foundry and 1000 tons of bessemer for second quarter. An inquiry for 1000 tons of foundry, put out about two weeks ago, is said to have been closed. Altogether, between inquiries and sales, the latter including a good many carload lots, business aggregating in excess of 5000 tons chiefly foundry iron, has been before the trade here recently. Aside from the 1000 tons of bessemer practically no interest has been shown in steelmaking grades. It would be an exaggeration to say that the market is even moderately active as there is rather pronounced disposition on the part of consumers to use up all the iron they have on hand and contracted for before making fresh purchases. The recent cut in prices as a business stimulant has not been particularly successful. News from Chicago that one of the selling interests there had scaled prices on old contracts to the new basis, has occasioned little surprise here. The belief still is quite general among merchant furnace interests that the cut in iron prices in view of the fact that no reduction was made in ore was too severe and it is well within the range of possibility that at future meetings between the government and the industry, these producers will be represented by a separate and independent committee. Indications point to a substantial pig iron production during March owing to the fact that weather conditions were almost perfect and a marked improvement was shown in the quality of coke. March averages compiled by W. P. Snyder & Co. from sales of valley iron of 1000 tons or more show $30 for basic and $31.14 for bessemer. Basic holds unchanged from January and February as no new sales were made during March and the shipments included no iron at the new price. Bessemer declined $1.06 due to sales or shipments at the reduced price.

Little New Business at Buffalo

Buffalo, April 1.—The pig iron business in this district does not seem to have been appreciably stimulated by the reduction in prices. Furnacemen say that some period of readjustment still is necessary before trade increases. Selling during the past week has been confined to carload lots, at the lower prices. Most of the inquiries that have been made have been confined to small lots. One furnace reports three inquiries for from 200 to 300-ton lots of foundry. The belief prevails that there is to be no price shading in this district, all interests agreeing that the present price is as low as the furnaces can accept and keep operating. Furnacemen are refusing to make the new prices retroactive.

Oppose Retroactive Price

Cleveland, April 1.—Pig iron makers in northern Ohio and surrounding districts have continued generally to take a position against making the recent reduction of $4.25 retroactive to apply on old orders. In view of the action of a large Chicago producer, however, in granting this concession on old orders, there is some difference of opinion as to whether such a position can be upheld indefinitely. Some producers apparently have not made up their mind finally on this matter. An echo of possible complications along this line is a meeting of leading producers of light castings in this territory to be held this week, at which a plea will be made to the furnaces to make the new price retroactive, and a protest will be framed against the adoption of a valley instead of a furnace base by makers in this territory. These consumers declare this situation puts them at a sharp disadvantage against Chicago competitors. Some producers continue to quote on the valley basis or $28.15, Cleveland, for No. 2 foundry but sales have been made of 2.25 to 2.75 silicon iron at $29 Cleveland, equivalent to $27.75 Cleveland for No. 2 foundry. This latter price represents an absorption of part of the valley freight. A moderate broadening of the market in this district both in inquiry and sales for second quarter and last half, has appeared this week. One large producer reports a sale of 2000 tons of foundry iron shipment to begin at once in addition to smaller lots. Another transaction outside the immediate Cleveland district consists of several thousand tons. A local automobile casting plant has been buying steadily recently at the rate of 1000 tons or more monthly. Three inquiries for 1000 tons each of foundry iron have been current, but one of these by tractor interests, since has been withdrawn. While shipments in most cases are a little better, piling of iron on furnace yards is continuing.

Chicago Contracts Reduced

Chicago, April 1.—Contrary to expectations and without its being a part of the price stabilizing plan worked out recently at Washington producers of pig iron in the Chicago district have decided to apply the reduction of $4.25 per ton to all tonnages shipped on and after March 21. The leading merchant producer, Pickands, Brown & Co., made the first announcement of this determination and others have followed the lead. One southern producer, the Tennessee Coal, Iron & Railroad Co., is invoicing iron to consumers in this district at the same rate. Nothing is known yet as to the attitude of other southern makers.

The reason for this decision is that producers believe contract holders are entitled to as low a price as others who buy at present and can compete in the market with their finished product. It is also stated it is being done in an effort to further the purpose of the general reduction program, to broaden the market and increase the volume of business generally.

Some increase in inquiry has been noted since the reduction was made and some buying has resulted, mostly for prompt delivery and in small tonnages. Inasmuch as most consumers bought heavily during 1918 for delivery up to July 1 of this year they have an excess of iron on yards or due from furnaces and probably will have considerable tonnage undelivered at the middle of the year to cover part of their needs for third quarter. In some cases it is believed present commitments will be sufficient for their requirements through the year. Under these circumstances heavy buying for last half will not begin for some time and probably will be less than usual, until needs for last half have been outlined more clearly.

Market Remains Sluggish

Cincinnati, O., April 1.—Very slow conditions continue in the pig iron market in this district. New inquiry has not been appreciably stimulated by the lower prices and sales remain exceedingly light. There is no interest in contracting at present on the part of leaders beyond July 1. Such sales as are being made are for early delivery. This tonnage is small. Furnaces in southern Ohio and in the South show indifference toward taking on additional tonnage at the lower prices.

Inquiries Increase at St. Louis

St. Louis, March 29.—Selling agencies and producers in this district report a liberal increase in inquiries for pig iron since the reduction in price. Thus far the volume of actual business has not been impressive, but the market has a better tone. While a certain portion of the inquiries are in the nature of feelers, many of them reflect bona fide demand. Virtually all the important producers of foundry represented in this market are quoting the new prices. Some small tonnages have changed hands this week on the revised schedule. A leading southern maker reported a larger number of inquiries this week than the aggregate of the preceding three weeks.

Many Inquiries But No Business

Birmingham, Ala., April 1.—Southern producers of pig iron report many inquiries from all parts of the country, but little actual business. The Alabama Co. has blown out its Ironton furnace and another plant in the district also is out. Two other fur-

naces may be banked this week, if there is no buying. Some furnacemen believe buying will start in during this month and that before long the quotations will be stronger, when the South can again take on some business. A considerable tonnage of iron has been sold for future shipment, it is announced by two of the active independent companies.

Add Less Carload Rate

New York, March 31.—Prices on iron and steel out of warehouses here were slightly advanced by some interests March 27. Prior to that date these jobbers and warehouses computed their prices by adding 75 cents plus the freight rate from Pittsburgh to New York, to the mill base per 100 pounds. Now, they are quoting in the same way, but are adding the less-than-carload freight rate. This is 31½c per 100 pounds, as compared with 27c, the carload freight rate. The new prices, therefore, are 4½ cents higher per 100 pounds than before. The present quotation on iron and steel products out of warehouses in metropolitan territory, are: Steel bars, 3.415c; structural shapes, 3.515c; plates, 3.715c; hoops and bands, 4.115c; No. 28 gage black sheets, 5.665c; No. 10 gage blue annealed sheets, 4.615c; No. 28 gage galvanized sheets, 7.015c. Other warehouses continue to quote on the old basis of 3.36c for steel bars, 3.47c for structural shapes, etc. and say they will not change for the present.

Spot Coke Lowest of Year

Decline in Consumption of Furnace Fuel Outstrips Curtailment of Output and Spot Offerings Forced Out—Sales Made at $3.75

Pittsburgh, April 1.—Notwithstanding the blowing out of a large number of beehive ovens in the Connellsville region during the past week, production of coke has not been declining quite so rapidly as has the consumption. The result is that some rather generous tonnages in loaded cars have been available and in the desire of owners to convert into cash the lowest prices of the year have been reached. In one instance, a large number of cars was moved at $3.75 ovens while 10 cents a ton less was the price on another contract. In both cases the coke was of standard furnace quality. Recently $4 marked the low point on choice brands of furnace fuel although a little business was done at $3.85. The spot or prompt market today is not quotable at higher than $4 for standard furnace although contracts covering the requirements of a couple of stacks for the next three months are reported to have been booked at $4.25. Business is positively slack in foundry fuel. Few makers now are quoting higher than $5.25 ovens for either spot or contract shipments. Some coke has accumulated on tracks is being offered as low as $4.50 ovens. According to the *Connellsville Courier* the Connellsville production of coke for the week ending March 22 was 187,806 tons, as compared with 202,308 tons in the previous week.

Withhold April Price

New York, April 1.—Eastern coke interests have not yet heard positively whether any prices are to be established in their line under government supervision. Hence they will not name April prices on by-product coke until they determine this point. Recently a New Jersey by-product maker fixed a price of $6 for March tonnage which is the same as that named by two New England makers.

St. Louis Market Dull

St. Louis, March 29.—There was no change in the coke market this week. Offerings are liberal, and despite reduced production at ovens which serve this district supply is adequate for the demand. Foundry grades are soft in price and extremely dull owing to the closing down of many important plants, and curtailment at others. Furnace coke is quieter than foundry and domestic grades are virtually unsalable. Dealers do not look for any revival in demand until the melting business improves. Liberal accumulations are reported by plants on both sides of the river and many of these still have coke coming along on contract.

Production Further Curtailed

Birmingham, Ala., April 1.—Reduction of pig iron output has brought about further curtailment of coke production in this district. Ovens that have been working on 42-hour coke are now producing 72-hour coke. A number of beehive and by-product coke ovens in Alabama are out of commission and will remain so until there is an improvement in the iron market. The coal production in Alabama during the past two weeks showed a little improvement, but the market for steam and bunker coal is stagnant. Coke prices quoted by independent producers have been shaded recently.

Seek Lower Prices on Ore

Furnacemen Reported Withholding Orders in Hope of Concessions—Vessel Rate May Remain Unchanged—Rider is Prepared

Ore business is still slow in developing, although operators have endeavored to make sales and have sought to improve the situation by agreeing on the form of rider to be attached to all contracts, providing for a refund to purchasers commensurate with any reduction the railroad administration may make in freight rates. No contracts were written during the past week for the sale of Lake Superior iron ore, furnaces being inclined to adopt a waiting attitude.

The furnace operators declare the price of pig iron as determined at Washington leaves the margin between production cost and selling price so narrow that some concession on the price of ore would serve to stimulate the market. No formal requests for concessions yet have been made to the ore men although there are intimations that these may be forthcoming shortly. So long as their supplies last the furnace men apparently are disposed to postpone buying.

The probability of a reduction in the shipping cost of ore owing to a lower vessel rate seems remote at this time, the general impression being that last season's rate is to be continued. The carriers are expected to take some action in the matter within the next week or two.

The rider to be attached to ore contracts as agreed upon by the independent ore operators follows:

The price named in the contract, dated ———, of which this rider forms a part, is based upon a railroad rate of $———, per ton, including federal taxes, from the mine to f.o.b. vessel at upper lake shipping port to which this ore is shipped, and upon a season's contract lake rate from said upper lake port to rail of the vessel at lower lake port of delivery of $——— per ton, including federal taxes, and said price shall be increased or decreased in the amount of any increase or decrease in said railroad rate or said lake rate, both including federal taxes, on that part of the ore covered by this contract transported during the period of time that such changes in rates are effective.

First shipments of ore are expected to be made the latter part of April, by the Pittsburgh Steamship Co. Officers, engineers, mates and crews of the 15 steamers of the company's fleet that wintered at Georgian bay ports have left Cleveland for those ports and their schedule calls for getting out the boats in three or four days. The vessels will take on supplies at the Soo and then proceed to Duluth.

To Open Foreign Offices

Philadelphia, April 2. (By wire.)—Waldo L. Phillips, of F. R. Phillips & Sons Co., Philadelphia, sails April 5 for Europe on the AQUITANIA with Leonard Williams, of Park & Williams, who are affiliated with the Phillips company in the pig iron export trade. They will visit western European countries and open an office for F. R. Phillips & Sons Co. in Milan, which will be in charge of Ernesto Damico. Mr. Damico soon is to be released from duties with the Italian military mission in New York. Mr. Phillips will remain on the other side an indefinite length of time and will establish offices in London and in Brussels. G. W. Ettinger, long time resident of Antwerp, now is affiliated with the Phillips company in charge of Belgian and South American business, particularly railroad business in Brazil.

Scrap Market Looking Up

Heavy Melting Steel Rises Briskly in East and Other Grades Follow —Buyers More Interested Generally—Dealers Collecting Tonnage

FOR COMPLETE SCRAP PRICES SEE PAGE 930

Philadelphia, April 1.—A sharp recovery has developed in heavy melting steel in eastern Pennsylvania territory and the whole scrap market is much stronger. One large eastern company is seeking to buy a large tonnage of steel and has offered $15.75 delivered. Dealers generally however, are holding for higher prices. Not all consumers are willing to pay the price now offered by this interest, but brokers are offering up to $16.50 delivered, for prompt and $17 delivered for May shipment. The prompt and nearby market may be quoted from $15.50 to $16.50 with a tendency toward higher levels. Rerolling rails which have been cheap, were sold the past week at $17 to $18 delivered, an advance of $1. Consumers are buying sparingly, however, as the outlook is that rerolling rails will be plentiful later and prices consequently will be lower. No. 1 busheling has been sod at $14 to $15, which is a decline. Wrought pipe, new specifications, again is up $1.50, at $17.50 to $18.50 on buying by the Bethlehem Steel Co. Old car wheels have been sold $1 higher at $23 to $24 delivered. Machine shop turnings are 50 cents up and frogs, switch and guard rails likewise are higher from $15.50 to $16.50 delivered.

Eastern Prices Holding Firm

New York, March 31.—Little change is noted in the local iron and steel scrap market. Prices for the most part are holding firm, and demand continues to be confined chiefly to heavy melting steel. There is, however, a fair demand for wrought pipe, and quotations on this material have advanced 50 cents to $14.50 and $15. While the increased activity expected as a result of lower prices on iron and steel has not as yet developed, sellers continue hopeful, as shown by the firmness of prices on virtually all descriptions.

Buyers More Interested

Pittsburgh, April 1.—While it would be some exaggeration to describe the market here for scrap iron and steel as even moderately active, steel mills are much more interested than they have been in some time. Heretofore dealers have had to pursue consumers; now consumers are beginning to look for supplies. This development has been followed by a considerable stiffening of the price views of the dealers. Heavy melting steel is now held at $16, and while small tonnages are moving at that price few dealers would undertake a contract because they fear they might not be able to cover it except at a loss. The mills have not raised their price views on this grade of materials quite so rapidly as have the dealers and this may account for the absence of reports of really large transactions in this grade. Inquiries for cast scrap of all sorts are quite numerous, and, without a great deal of material changing hands, prices are moving upward. Contracts for machine shop turnings are known to have been made at $11 and this is probably as low as any may now be secured, although the company that contracted for supplies at $11 is understood to have reduced its buying price to $10.50. It may be safely said that the market has turned the corner from the recent dullness and depression, but to a considerable extent the advances that have been recorded may be said to result as much from a desire on the part of dealers to get prices up to unload some of their cheap purchases as to the fact that consumers are showing more interest.

Prices Advance at Buffalo

Buffalo, April 1.—Reliable information has been received here that the Steel corporation has entered the market for a large tonnage of heavy melting steel scrap, and scrap men believe this heralds a large buying movement. The announcement in the Buffalo district sent heavy melting steel up to $14.50 and $15.50, an increase of 50 cents. There was no buying all week, but the market was stronger. It has been impossible to buy any large tonnages of any sort of scrap in this market for the past week at the quoted prices. Turnings and borings have been in good demand. It is understood that the Steel corporation is paying $17 for the tonnages of scrap it is contracting for.

Prospects Less Promising

Cleveland, April 1.—Scrap iron and steel dealers who have been believing that a large buying movement was just in the offing have revised their ideas somewhat. Thirty to 60 days may elapse before buying on a sizable scale is done, many now hold. Meanwhile, activity among dealers has quieted down considerably, and with the looked-for buying movement anticipated, trading the next week or so holds out poor prospects. The larger local consumers of scrap are shut down or running slack, while valley and Canton buyers are not now interested. The trade has been much cheered by the announcement of the New York Central railroad lifting its embargo on scrap to all but a very few points. With the Pennsylvania having abandoned the permit system, scrap dealers now are free, virtually, to ship anywhere on these trunk lines without permits. Turnings are showing considerable strength and this week stand at $8 to $8.50. No. 1 busheling also has advanced 50 cents a ton, to $14.50 to $15.

Dealers Buying Much

Chicago, April 1.—Most activity in the scrap iron and steel market at present is manifested by dealers who are taking considerable tonnages to be laid down in their yards until the apparent inevitable rise carries prices well beyond the present level. As a result of this condition, railroads and other producers are receiving more for their scrap accumulations than dealers can obtain from consumers. Not much buying is being done by actual consumers, but the entire situation is much brighter than formerly. Foundry grades are strong, while rolling mill grades are dull. Some new demand has been noted recently for rerolling rails, which formerly were a drug. Railroad offerings continue fairly large and no difficulty is experienced in disposing of them. The Chicago, Milwaukee & St. Paul offers 1200 tons, the Chicago & North Western 2500 tons, the Chicago, Burlington & Quincy 750 tons and the Wabash 400 cast iron car and locomotive wheels.

Little Change at Cincinnati

Cincinnati, O., April 1.—Conditions in the scrap iron steel market in this district have remained virtually unchanged during the past week. Demand is very small from all sources although there seems to be a tendency among consumers here and there to show more interest in keeping in touch with the movement of the market if not actually to buy tonnage. Prices remain quotable the same as a week ago.

Few Offerings; Higher Prices

St. Louis, March 29.—Some competition continues among dealers and yard interests for the scant offerings of scrap, and this has resulted in a further marking up of prices. Aside from small purchases by steel mills, consumers are not taking an interest in the market. Buying by the dealers is in the nature of discounting an improvement in the consumptive demand, which they believe will develop in the near future. Opinion is varied, however, and many interests on both sides of the market are pessimistic. Offerings are confined to railroad sources, as practically nothing is coming in from the country. The St. Louis Terminal Railway association disposed of 300 tons of rails this week, which brought top prices. The only other offerings heard of were five cars of wheels by the Wabash and 200 tons of melting steel by the Clover Leaf. Carriers are not selling anything except tonnages which they are obliged to move for lack of storage space. The leading foundry interest here has on hand about 15,000 tons, including 6000 tons of cast iron. Barring some unlooked for development, this will be all this company will need this year. The rolling mills also have fair accumulations.

Quotations Still Low in South

Birmingham, Ala., April 1.—Scrap iron and steel quotations in the South are still low and there is not much business being transacted. In fact, the dealers are the most active, buying in stock for future trading. The largest consumer of heavy melting steel has been buying very slowly. There is considerably more stock on yards now than four months ago.

Repair Cromwell Plant

Repair work on the plant of the Cromwell Steel Co., Lorain, O., was begun this week and it is reported that production will begin at an early date. W. S. Greenwalt has been appointed acting superintendent. The

plant consists of four 90-ton open-hearth furnaces with a capacity of 15,000 tons of ingots per month. The plant is to be operated in the name of J. C. Cromwell as an individual, Mr. Cromwell having obtained a 99-year lease on the property owned by the Cromwell Steel Co., in which he has the controlling interest. The plant has been closed since Dec. 15, 1918.

More Inquiry

Coming Out in Cast Iron Pipe—Buttweld Material Livelier

Chicago, April 1.—Somewhat better inquiry for cast iron pipe is being received since the recent reduction but this has not yet reached the point of bringing out such tonnages as manufacturers desire. The United States Cast Iron Pipe & Foundry Co. has taken 1144 tons at Ft. Wayne, Ind., and figures taken on 350 tons at Saginaw, Mich., last week have not resulted in an award being made. Bids will be taken April 8 on 325 tons at Detroit, April 10 on 225 tons at Mitchell, S. Dak., and April 11 on 100 tons at Spencer, Iowa, the latter being a readvertisement. It is probable the date for opening bids on 4600 tons at Akron, O., will be changed from April 18 to April 25.

Reduction Brings Out Orders

New York, March 31.—Sellers of cast iron pipe in the East report increased activity as a result of a $5 reduction in prices, although but a few days have elapsed. They state that this is not as yet noticeable in municipal demand, but is clearly apparent in the demand coming out from the smaller interests. As a result a fairly good volume of small tonnages are being booked. In the way of municipal demand, the 1500 tons for Bayonne, N. J., is the only business of consequence now pending. At the new schedule prices on class pipe are $60.70 on 4-inch material, and $57.70 on 6-inch and over. Class A pipe is $1 a ton higher. This reduction of $5 a ton followed similar action by western makers early last week.

More Doing in Butweld Pipe

Pittsburgh, April 1.—Chief in interest of the developments in the tubular goods situation since the current reduction in prices has been a moderate but perceptible increase in the demand for the buttweld sizes of standard pipe. This class of goods for some time past has been extremely inactive and current demands probably are explainable by the fact that building operations most likely will go forward now that spring is at hand. No letup is noted in the demand for oil country goods but inquiries that have been before makers for some little time in line pipe still are to be closed. Standard pipe in lapweld sizes is moving off fairly well but there is room for improvement.

Few Orders Placed for Pipe

Birmingham, Ala., April 1.—Cast iron pipe makers in the South are still hoping for business. A few orders for pipe are being worked on in this section but the aggregate tonnage is not large.

Shape Market More Lively

New Inquiry Coming Out Better in All Districts—Principal Awards Confined to Automobile and Accessory Producers

Cleveland, April 1.—Business in the structural market has improved considerably, contracts awarded during the past week through engineers and contractors in this territory amounting to between 2000 and 2500 tons. It is significant that practically all the business was placed by automobile and accessory companies. One of the most recent among the awards were 800 tons for extensions of the Willys-Morrow Co. plant at Elmira, N. Y., 800 tons for foundry extensions at Pontiac, Mich., and 500 tons for the Standard Parts Co., at Flint, Mich. Selling agencies reported a larger volume of inquiries than in several months, but commercial building operations have not yet developed the business that was expected when price reductions were made. Some prominent prospective builders are talking 2-cent steel as necessary before they will go ahead with their projects.

Inquiries Increase in East

New York, March 31.—While few large tonnages are coming out, the local structural market is showing more life. Fabricators report a better volume of miscellaneous inquiry, with an improvement in actual buying. Quite a little demand at this time is said to be coming out from the jobbers, whose stocks for some time have stood in need of replenishing. Talk of various new building projects is an increasing factor in the bettter sentiment now prevailing but so far the work referred to has not materialized to any extent in bids.

Better Run in East

Philadelphia, April 1.—Shape orders in the east have improved but only perceptibly as they run into very little tonnage in the aggregate. There is, however, a better tone in the structural market due to the fact that a number of new projects are being mentioned. The largest of these is 2000 to 2500 tons for a new building for the Hershey Chocolate Co., Hershey, Pa. A considerable tonnage of shapes for shipment to France has been asked for by the overseas department of the army.

Lettings at Expense of Profits

Pittsburgh, April 1.—Some increase is noted in the number of structural lettings reported by manufacturers in this district, but with the exception of one, which involved 800 to 1000 tons, the awards have involved extremely small tonnages. In several cases, it is declared, successful bidders have named prices that made no allowance either for profits or overhead charges. This award of 800 to 1000 tons went to the McClintic-Marshall Co., and was for a building for the Wilson Foundry & Machine Co., Pontiac, Mich. This company also reports having taken 100 tons for the Lake street bridge, Geneva, N. Y., and about 300 tons, distributed among several projects. Estimating departments of the various companies are reported to be extremely busy and it is generally believed that more tonnage will be placed shortly. At the same time, however, the opinion is expressed that construction will not go forward actively until other materials beside steel have come down.

Structurals Moving Slowly

Chicago, April 1.—Demand for structural steel is coming out slowly but a number of large projects which have been held up for some time promise to give considerable business soon. Bids are now in and under consideration on the large tonnage for the Butler Bros.' warehouse in Chicago. As a separate contract, but intimately connected with this warehouse is a viaduct on Randolph street, Chicago, which will require 500 tons of steel. The only tonnage closed in the west last week involves 200 tons, which will be fabricated by the Wisconsin Bridge & Iron Co., for the Standard Oil Co.

CONTRACTS AWARDED

Heat treating and forge plant for Willis-Morrow Co., Elmira, N. Y., 800 tons, to Jones & Laughlin Steel Co.

Receiving station for Wellman-Seaver-Morgan Co., Akron, O., and factory building for Accurate Machine Co., Cleveland, 115 tons, to Miles Forge & Mfg. Co.

Plant for Standard Parts Co., at Flint, Mich., 500 tons, to McClintic-Marshall by Hunkin-Conkey Construction Co., general contractors.

Two headframes for the Standard Oil Co., Schoper, Ill., 200 tons, to the Wisconsin Bridge & Iron Co.

Building for Wilson Foundry & Machine Co., Pontiac, Mich., 800 tons to the McClintic-Marshall Co.

Lake street bridge, Geneva, N. Y., 100 tons, to the McClintic-Marshall Co.

Extension to power house of Superior Steel Corp., Carnegie, Pa.; boiler house for Macbeth-Evans Glass Co., Pittsburgh; coal trestle for Buckrun Coal Co., and pulverizing building for the Lytle Coal Co., totaling about 300 tons to the McClintic-Marshall Co.

CONTRACTS PENDING

Keith Theater, the Bronx, New York City, 500 tons, bids taken.

Bridge for Chesapeake & Ohio railroad 600 tons, bids being taken.

Knickerbocker hospital, the Bronx, New York City, 400 tons, bids being taken.

Post office for Charleston, Mass., 700 tons, bids being taken.

Bridge for Pennsylvania railroad near Camden, N. J., 200 tons, bids being taken.

Extensions to Mare Island navy yard, 600 tons, bids to be taken April 7.

Factory building and powerhouse for the Hershey Chocolate Co., Hershey, Pa., 2000 to 2500 tons, bids being taken.

Viaduct for city of Philadelphia, several hundred tons, bids being taken.

The Youngstown Steel Products Co., Youngstown, O., capitalized at $5000, has been incorporated. This company will market and distribute the various products of the Youngstown Sheet & Tube Co., Youngstown, O., in districts where the latter company has no sales offices. The officers of the Youngstown Steel Products Co. are William E. Manning, Walter E. Watson, William J. Morris, Walter E. Meub and Leroy A. Manchester.

Bar Tonnage on Increase

Response to Lower Prices, However, is Spotty—Buyers More Cautious —Automobile and Parts Industry Still Order More Actively

Philadelphia, April 1.—Steel bars apparently reflect the greatest improvement in finished steel demand. One large interest with sales offices in all parts of the country reports new bookings the past week at better than 75 per cent of capacity, which was considerably in excess of shipments. The showing in the west was better than in the east but in this immediate district 100-ton orders have been numerous. Eastern makers of bearings, drop forgings, various kind of machinery and jobbers are included among the buyers. Inquiries are numerous. Some sales of reinforcing bars have been made but this product is still very dull. Some business is being closed in iron bars at 2.35c, Pittsburgh, for refined or common merchant iron and 3.35c, Pittsburgh, for double refined or best refined brands. It is expected that this confusion in terms of bar iron will be removed at an early meeting of the eastern makers. Bolt demand is dull but large orders placed during the buying movement, which ended two months ago, still keep eastern makers busy. Orders for shafting are good. Some leading makers who are quoting 28 per cent off on less carloads the same as on carloads, have ceased to do so. A discount of 23 off now is being applied in all cases to less carloads. The army overseas department is inquiring for 2000 tons of bars with some plates and shapes included.

Demand Steady for Small Lots

Pittsburgh, April 1.—Merchant steel bars are selling steadily in small lots, buyers being disinclined to enter upon long time engagements since they are satisfied that if prices are not going to be lower in the near future, the chances of an advance equally are remote. Orders rather than contracts are the rule even among automobile and farm implement manufacturers, who are the busiest among the users of steel bars. The recent reduction in prices has not brought about much activity as yet in concrete reinforcing bars which are quoted at 2.35c base Pittsburgh, with the usual extras for twisting and deforming. A fair amount of business has been released in iron bars by the recent reduction. Classification of iron bars by Pittsburgh makers is somewhat different than during the war. The base price of 2.75c Pittsburgh is for refined iron bars while all pig iron or muck bars are quoted at 4.75c, Pittsburgh.

Mill Tonnage is Greater

Cleveland, April 1.—Heavier tonnages continue to be represented by specifications for bar mill products coming to the mills from consuming interests in this territory. All the district sales offices of leading producers report a liberal tonnage of this kind. In some cases the amount passed to the mills has been the best for any period in six months. Automobile producers and parts manufacturers are the most prominent in ordering in bar and small shape tonnage. One of the leading northern Ohio auto builders specified for some thousands of tons in the week. Considerable business is being done in screw stock. The 800 tons of reinforcing bars for a Kansas City bridge has not yet been awarded to the mills by E. S. Hecker Co., Cleveland, the general contractor.

New Business is Slow

Chicago, April 1.—Makers of soft steel bars find a small but steady increase of inquiry and buying. The better conditions which were expected to follow recent reductions seem to be definitely on the way but are somewhat slow in arriving as the market apparently needs time to digest the situation thoroughly and assure itself that the present price level will hold against further decline through the present year. Operating schedules of steel plants in this district are enlarged from the preceding week, which was lower than had been the case for some time.

Bar iron is meeting with small inquiry and comparatively little selling with quotations ranging from 2.55c to 2.60c, Chicago, mill. This is the equivalent of 2.28c to 2.30c, Pittsburgh, and is considerably lower than the eastern figure now being quoted. Some bar mills are operating at better rate than formerly. Hard steel bars are meeting somewhat better inquiry, and some mills which have been idle for a long time will resume operation soon. The renewed inquiry is both from users of reinforcing bars and from manufacturers.

Buffalo Market Inactive

Buffalo, April 1.—Since the fixing of the new prices, when a small number of bar orders were received by local makers, there has not been any great volume of business in this district. What buying there was left the market firm at the new prices but inactive. Mill interests here say they will make little profit at the new price.

Fair Number of Orders

Pittsburgh, April 1.—Makers of cold-rolled shafting report the receipt of an increased number of orders at the lower prices recently named, with the demand from automobile manufacturers notably good. Consumers, however, are satisfied that if prices are not going to be lower in the immediate future, at least the chances are just as great against an increase, and they are, therefore, content to pursue a hand-to-mouth policy with regard to requirements.

Bolts and Nuts Steady

Chicago, April 1.—In spite of the deep cut in quotations on bolts and nuts, sufficient time has not yet elapsed to give the trade opportunity to come into the market for enlarged orders. The reduction averages about 20 per cent from the former level and inasmuch as considerable business was being taken at the former discount, this price should increase the volume of business.

Bolt Business Brought Out

Cleveland, April 2.—Publication of reduced prices on nuts, bolts and rivets has had the effect of bringing out prospective buyers who have been holding off for several weeks anticipating lower prices. Inquiries are again numerous, but makers report bookings are few and small because it is too early for consumers to have adjusted themselves to the new order of things. Operations at present represent 50 to 60 per cent of capacity.

Lower Prices Release Orders

Pittsburgh, April 1.—While it is considered too early for the recent revision of $8 to $10 in nuts, bolts and rivets to be effective on business and trading still is far from active, a number of makers note improvement. Recent orders which would not have come out except for the cut have been released. The knife has been applied to prices of these products more deeply than in some other lines, and it is asserted that concessions from the new levels would be at the expense of profit. Since the federal trade commission's regulations provide for a penalty for sales at prices below costs, the belief prevails that the new prices which became effective March 28 and apply to all shipments on or after that date, are at rock bottom.

No Increase in Demand

Pittsburgh, April 1.—Reduction in the prices of hoops and bands to 3.05c, Pittsburgh, has brought about no increase in the demand, makers still reporting orders to be both limited and not particularly frequent.

English Ferro

Quoted at $150 Seaboard—Old Lower-Priced Tonnage Arrives

New York, March 31.—Although demand for ferromanganese still lacks volume, it has improved. There is more inquiry for single carloads. The flat price of the larger producers is $150, delivered, for 80 per cent metal. The only standard 80 per cent metal which is available at lower prices is comprised of resale lots, since one producer, who a couple of weeks ago sold 80 per cent at as low as $130, delivered, now has no more standard metal left. Resale 80 per cent ferromanganese may be had at $130, delivered, but it is not as freely obtainable as before. American representatives of English ferromanganese makers have been quoted a selling price during the past week of $150, c.i.f. Atlantic ports. No sales as yet have resulted. There still is some question as to securing import licenses, since the last ruling of the war trade board authorized the importation of metals sold prior to our entry into the war. Nothing since has been said with respect to granting licenses for metal sold since that time. Makers of spiegeleisen are offering this metal at prices ranging from $40 to $45 at the furnace, for 16 to 21 per cent. Resale material, however, may be had at less. In fact, the market on resale spiegel-

eisen may be quoted at $37 to $42 at the furnace. Demand is somewhat better but still involves only carload lots.

Ferromanganese Still Slipping

Pittsburgh, April 1.—The market for ferromanganese still is dropping and on resale business, which constitutes practically all of the current trading, $120 now seems to be the limit, although there is basis for a quotation as low as $110, as it is known that one company, quoting slightly more than the latter price, failed to secure an order. This range is on 80 per cent material and the fresh decline in prices may be ascribed largely to the arrival in this country of several thousand tons of English ferromanganese, some of which is on old contracts made as low as $35 a ton. The average invoice price of these imported tonnages is somewhere in the neighborhood of $114. No direct business is being done as makers generally are holding to $150 for 80 per cent ferro, while the average price idea of most consumers is around $100. There seems to be a disposition on the part of consumers who are well stocked with ferromanganese to use it up rather than to sell it on today's market. This course means less competition for makers but at the same time keeps consumers out of the market, and therefore renders impossible any business at the advanced-price notions of the manufacturers.

Electrolytic ferrosilicon still takes a range of from $90 to $100, freight allowed, for 50 per cent material. Some makers are known to have offered to book orders at $105, but the probabilities are that a bid of $100 would be accepted. The lower quotation is on resale tonnages.

Prices are extremely indeterminate on spiegeleisen for the reason that sales are few and far between and consumers are too well supplied to have any further interest in the market. Nominally this alloy takes a range of from $40 to $45, furnace, for 16 per cent material, but it is said that on resale tonnages much difficulty has been experienced in obtaining $40.

To Let Another Furnace

Another order for a 350-ton furnace for the Indian Iron & Steel Co., probably will be placed within a few weeks by the Arthur G. McKee & Co., engineers, Cleveland. The contract for the first furnace was let recently to the William B. Pollock Co., Youngstown, O. The United Engineering & Foundry Co., with plants in Youngstown, has just shipped the drive for a 28-inch sheet mill for the Tata Iron & Steel Co.

Officers of the Wichita Tractor Co., Inc., Wichita, Kans., were elected at its annual meeting as follows: President, C. W. Levis; vice president, W. R. Brush; secretary, J. C. Conley, and treasurer, J. M. Reynolds. In order to take care of its increasing business, $125,000 additional treasury stock will be issued. The company has recently made a distributing contract with the Farm Tractor Sales Co., 1710 McGee street, Kansas City, Mo., to handle its entire output for 1919.

Plate Orders Come Slowly

Better Inquiry Shown But Orders Still Are Limited—Mill Orders Getting Down and Further Curtailment of Production is Made

Philadelphia, April 1.—Eastern plate makers report a better buying movement and increased inquiries at the lower prices now prevailing. Actual orders so far have been rather small but the outlook apparently is improving. Among the orders expected to be closed this week is one for 4000 tons. Eastern mills although operating at greatly reduced rate, are encouraged by purchases of plates by the Standard Oil Co. in the Pittsburgh district and by the better outlook in eastern territory. The navy department will open bids Friday on 20,000 tons of plates, shapes and bars for battle and fuel ship construction.

Demand Continues Limited

Pittsburgh, April 1.—No appreciable increase has yet developed in the demand for plates as a result of the recent reduction in prices. Some small orders are coming out but the car builders are getting down to the end of their orders while the Emergency Fleet corporation's requirements seem to be covered for the next few months. It is reported here that the purchasing department of the railroad administration does not view with favor the new prices that have been named for steel and is inclined to go slowly in the matter of purchases. As a result of the lack of new plate orders, the No. 2 134-inch plate mill of the Cambria Steel Co., Johnstown, Pa., was shut down late last week for an indefinite period. This mill has been working solely on ship plates for the Emergency Fleet corporation and has completed all the orders on hand. The No. 1 134-inch mill of this company is being run only on part time.

Few Suspensions Likely

Cleveland, April 1.—A summary of vessel construction on the Great Lakes for the Emergency Fleet corporation shows a possibility of very few suspensions or cancellations. This is in accordance with previous statements published in these columns and it effectually sets at rest revived rumors to the effect that some extensive suspensions might result. This summary shows that of 273 boats now under construction on the Great Lakes for the Fleet corporation, 261 will be completed this year. The remaining 12 have been suspended. There is a possibility, however, that some of the latter may be put through before the year ends in which event they will probably be permitted to go ahead. There has been no pronounced stimulation of the plate market, though local producers entered several thousand tons during the week which was a better showing than for some time. Some tonnage which has been held up for several weeks is being released.

Auto Sheet Orders Revive

Good Tonnage Again Coming to Mills After Period of Hesitancy—Miscellaneous Tonnage Still Appears Slowly

Pittsburgh, April 1.—A good-sized tonnage for automobile sheets is coming to makers in this district, the recent cut in prices having the effect of restoring the demand which recently was inclined to taper off. Orders for other kinds of sheets also are somewhat larger than they have been, although room still exists for improvement. Specifications against unfilled tonnages since the new prices were made retroactive are reported to be coming along a little faster than was the case recently. It cannot be said that consumers are inclined to abandon a policy of hand to mouth buying and signs do not point to a marked change made in prices either way in the near future. Mill operations have not increased materially but enough business has come out to prevent a further contraction.

Sales Increase at Cleveland

Cleveland, April 1.—A notable increase in the demand for sheets developed during the past week, a larger volume of business being reported than in some time. Most of the buying was done by automobile companies, a leading maker reporting sales of over 3000 tons, nearly all of which was for this class of manufacture. No price concessions were made in this district, although some prospective buyers have called attention to reductions they claim recently were offered in the Chicago district.

Southerners Place Some Orders

Youngstown, O., March 31.—Orders for sheets with some valley makers still are extremely scarce, while with others enough business was received in today's mail to keep the mills busy for at least two weeks. In the latter case the business came mostly from southern consumers and is exclusively for roofing material. Two export orders were booked by one maker, but these were only for small tonnages. An inquiry from Japan for 800 to 1000 tons of galvanized is probably the largest inquiry which came to valley makers this week. In some quarters domestic inquiries were received, mostly in the nature of open letters. While the inquirers did not ask for quotations lower than the prevailing market prices, it was intimated that a reduction would induce the inquirers to place business. Replies contained no encouragement. It is held by many that the sudden spurt of business last week was merely the release of that business held back while the Redfield plan was worked out.

Track Material

Brought in Line With Other Prices—Still Expect Rail Orders

Chicago, April 1.—Following reductions in finished steel, new prices have been made on track fastenings. Angle bars and tie plates have been reduced $5 per ton from 3.00c to 2.75c, Chicago mill. Railroad spikes have been reduced $6 per ton from 3.92c to 3.62c, Chicago, and track bolts an equal reduction to 4.62c, Chicago. Railroads have not yet shown any activity in the iron and steel market, although purchasing agents have their requirements well lined up and will enter the market as soon as permission is given them by the railroad administration.

Light Rails Sold

Philadelphia, April 1.—Demand for light rails is improved and fair tonnages are being sold at 2.45c Pittsburgh. The feeling here is that railroad buying can be expected soon, as it is scarcely believed the government authorities would care to assume the blame for the consequences of undue delay in government purchases, now that prices have been reduced.

Still Await Rails Order

Pittsburgh, April 1.—What course the railroad administration will pursue is a subject of keen interest to the makers of rails and other track equipment. It has been suggested in some quarters that the director of purchases of the railroad administration does not take kindly to the new steel prices and will seek to defer buying in the hope of driving a close bargain. On the other hand, those who attended the recent price conference at Washington are satisfied that the government is committed to purchase at least 1,000,000 tons of rails and from 300,000 to 400,000 tons of other steel and will go through with such purchases at no distant date. Some export business is on the books of rail mills in this district but domestic orders are extremely limited, although it is said a fair amount of French business is on hand at the southern and western plants of the Steel corporation. Track bolts have been cut $9 a ton, now being quoted at 4.35c, Pittsburgh, for lots of 200 kegs or more and 4.90c for less than carloads. New demands are light, in keeping with the dullness in rails. Angle splice bars have been cut $5 a ton to a basis of 2.75c, Pittsburgh. First reports had spikes reduced $8 a ton to 3.25c, Pittsburgh, but revision of the figures makes the cut $6 a ton, and the basis 3.35c, Pittsburgh, for carloads and to 4.25c for less carloads. Small spikes are the same price as the larger ones with little demand for either size at the moment. Almost no demand is noted for light rails.

Sluggish Buying

Is Continuing in Semi-finished Material—Cleveland Plant Resumes

Cleveland, April 1.—Buyers of semi-finished material still are acting cautiously regardless of the lower price and new tonnage of this character has shown no considerable enlargement. Nor are they ordering out material freely against old contracts. There are some reports current in the market of price shading, but these generally are attributed to middlemen and not to original producers. Some specifications having been accumulated, the McKinney Steel Co. resumed operations this week at its steel works in this city but production is only on a partial basis. Some new export inquiry for sheet bars appeared this week.

Demands Increase Moderately

Pittsburgh, April 1.—While business in billets and sheet bars is somewhat more active than it was recently, it is far from satisfactory, as finishing mills generally seem to be covered and demands for finished steel have not increased enough to lead to any additional requirements. The sheet mills are getting quite a good deal of business in automobile sheets but users of other kinds of sheets are content to pursue a hand-to-mouth policy with regard to purchases. One inquiry for approximately 1000 tons of re-rolling billets is reported but as yet it has not been closed and demands in general run chiefly for considerably smaller tonnages. Wire rods are selling only fairly well to domestic consumers while the export demand has tapered off to rather slim proportions, due to the fact that ship space is not only extremely high but also very scarce.

Fair Demand

Only Exists in Tin Plate Though Active Season is On

Pittsburgh, April 1.—Demand for tin plate at the moment is only fair and mill operations have declined somewhat since last accounts. The American Sheet & Tin Plate Co. is on a 65 per cent schedule this week, running all but one of its mills, but is averaging only a light output. Independent mills are running somewhat below 50 per cent of capacity. Dullness at this season is unusual and explanation probably is to be found in the fact that while the government has agreed to take off the hands of packers some 5,000,000 cases of canned goods, it has not yet done so and the plans of the packers in consequence are held up. It is believed that with the transfer of these stocks and the money for them in the hands of the packers the latter will go ahead on can purchases and the can manufacturers then will require supplies of tin plate. Makers of tin plate are not discouraged over the outlook believing that fundamental conditions will result in the usual annual increase in the pack this year. As manufacturers are not inclined to stock tin plate, the possibility exists of a scarcity later in the year in the event that packing operations are on the usual scale.

The Nonferrous Metals

Copper **Lead** **Spelter** **Tin**

	Copper	†Spot Straits, tin	‡Lead, New York basis	Spelter St. Louis basis	Aluminum	Spot antimony
March 26	15.25	72.50	5.25	6.20	33.00	6.37½
March 27	15.25	72.50	5.25	6.20	33.00	6.37½
March 28	15.25	72.50	5.25	6.25	33.00	6.37½
March 31	15.37½	72.50	5.25	6.25	33.00	6.37½
April 1	15.50	72.50	5.25	6.27½	33.00	6.37½

†United States Steel Products Co.'s price to consumers, dealers and jobbers.
‡American Smelting & Refining Co.'s price.

NEW YORK, April 1.—Decided improvement has been evident in the markets for the nonferrous metals within the past several days. How much of this improvement has been due to the stabilizing of steel prices cannot be known, but there is no question but the steadying influence on the whole business situation of this action of the steel trade and the industrial board has been reflected in the metal markets. Copper has been in good demand, particularly from manufacturers of electrical equipment, although wire mills and brass mills also have been buyers.

The copper market advanced last week from around 15c delivered to 15.25c and on Monday again advanced, to 15.50c, delivered. At this figure it held firmly Tuesday and none was obtainable lower, with futures still higher, up to 15.62½c for next summer. Trading in copper was resumed on the New York metal exchange after a lapse of five years, buyers being in evidence with few sellers. Casting copper is quoted 15.12½c to 15.25c.

Spelter has advanced five to 10 points the past week, in the face of continued overproduction and large stocks, due to the growing reluctance of sellers to accept less, preferring to stay out of the market. Brass special continues to command a premium of about 10 points to an eighth cent over prime western. High grade spelter is quoted 7c to 8c, delivered. Sheet prices were reduced to 10c, base, f.o.b. mill, with usual discounts and extras; plate zinc, 9c.

The lead market continued dull the past week, but strengthened on Monday, in line with the improvement in other metals. The market is statistically in a good position and should be quick to respond to favorable conditions. Outsiders ceased cutting the leading interest's quotation, the market now being 5.25c New York, 5c East St. Louis.

The feature of the tin situation last week was the withdrawal of the domestic smelters from the market, at the request of the tin administration. The domestic smelters had been selling tin in lots of five tons and less at concessions from the government price of 72.50c, f.o.b. New York and Chicago.

The aluminum market continues dull, with virgin metal obtainable from second hands at considerable concessions from the quotation of the producer. Virgin ingot has sold at 28c, whereas the producer is quoting 1919 deliveries 33c. No. 12 remelted alloy prices have been weaker, at 24.50c to 25c. Yesterday aluminum became a little firmer, but No. 12 quotations were unchanged, with No. 1 remelted today 36.50c to 29c, virgin 29c to 30c.

Trade Promises Unfulfilled Abroad

Reduced Prices Give Hope for Increased Export Business in Iron and Steel—Delayed Cables and Insufficient Credits Prove Irksome Checks—Far Eastern Business Dull—Exporters Are Encouraged by Government's Aid

NEW YORK, March 31.—Export business begins to look up again with the clearing of the atmosphere by the promulgation of the new prices. Foreign orders now generally are being executed upon the basis of these prices. The mills have been willing to make the concessions without complaint. One important mill has notified its agents that all pending orders will be filled at the reduced prices, thereby clearing up a point of uncertainty. It was indefinite heretofore whether the reduced prices would apply to business already on the books and some believed that they would apply only to new orders received after the new schedule was pronounced. This mill, located in the Pittsburgh district, is understood to have on its books orders for sheets and plates for export.

This attitude ultimately may be assumed throughout the industry but as yet this fact has not been established. Some of the mills advised export agents to hold off all orders when it became definitely established that a new price schedule was to be promulgated. It is inferred that these mills intended to quote the reduced prices only on orders received after the schedule had been announced. Export houses are somewhat fearful that the result is going to be that some producers will be post-dating their prices, whereas others will insist upon the payment of that price in effect when the order was booked. Such a situation would prove very disconcerting to the foreign business because it is difficult to explain to foreign buyers why they are compelled to pay one price for a certain tonnage and another price for a supplemental tonnage.

Business notwithstanding is said to be improving and the export agents have reason to believe that it is going to be better. On one inquiry for 475 tons of bars for the Far East the old basis was quoted. Since the reduction the agent has cabled the new quotation and it is believed that an order will result. On the other hand a sale to South America of approximately eight carloads of sheets had been made, which, due to the liberality of the mill will go at the new prices. Some few hundred tons of wire for the Far East have been sold on the new basis.

New Markets Are Opening

Owing to the continued harbor strike at Buenos Aires, shipments have been made on sailing ships. One house cleared about 2000 tons of steel during March for Argentine in this manner. Some nails have been sold during the past week and Italy has sent some inquiries for wire goods. The large business promised from Italy has not matured because of the lack of money and now the exchange is discouraging. Greece, however, has recently come into the market with inquiries for wire and galvanized sheets. The South American inquiries for track bolts, rails, locomotives and other construction materials continue to be received but no new orders apparently have been written.

A few job lots, materials left by the war, are still in the market. Some of the more recent offerings include 2000 kegs of common nails, which the mill proposed to sell at $2.50, Cleveland, and about 300 tons of mild steel bars offered at $1.50, f.o.b. mill. The latter is a New England offer.

Europe has been inquiring for wire, shapes, plates and bars. Norway, Sweden and Belgium have been asking for tin plate. The Far East also has been inquiring for some tin plate, but it is reported that the Far East business has grown somewhat dull recently. This is undoubtedly due to the inability to ship via the Pacific coast ports caused by the high transportation charges, and the difficulty of shipping via New York owing to the congestion.

The new export rates proposed by the railroad administration from interior points to Pacific coast ports are looked upon with favor by American export agents. The rail rate on iron products to coast ports, according to the suggested schedule, will be 60 cents per 100 pounds; railway equipment, 75 cents; pig iron 55 cents, and iron castings, 70 cents. The vessel accommodations from Pacific ports are much easier than from the port of New York for the Far East. Export houses have been desiring for some time to shop the other way, and because of the congestion of goods for the Far East moving through New York some orders have been lost in the immediate past. The charge for shipping through the Pacific ports has been too high to permit heretofore the meeting of foreign competition in the Far Eastern markets.

The ocean rate on iron products from coast ports to Japan has been 60 cents, and the rail rate 85 cents, making a total through charge of $1.45. If the railroad administration makes its proposed change effective this through rate will be reduced by 25 cents, which will permit American iron produces to complete easily in the Far East. Exporters, however, hold some fear that the conference ship lines will attempt to absorb the reduced rate by advancing the ocean charge. The only guarantee they have against this is the ability of the shipping board to allocate government vessels to the trade.

Delays in transmitting cable messages have made it impossible to estimate to what extent the new level of prices will stimulate foreign buying. One of the Pacific cables has been broken and in the case of a particular message a delay of 17 days was experienced. Even now it takes on an average of 10 days to get a cable to Japan. Delays have also been experienced in sending and receiving cables from Europe, but the delay there is caused by a pressure of business. Italian cables appear to be the most delayed inasmuch as to reach Italy a mesage must be sent either via London or over the French cables. Exporters do not desire to send over the English cables inasmuch as they are fully convinced that their secrecy is not protected. It has been charged that commercial messages passing over the British cables are shown to the British board of trade where the information may be of use to the British manufacturers. The American houses have complained of this practice on the part of the British and it was the impression that the English had agreed to put a stop to it. It requires from one to two days to get a cable to Argentine.

Loan Postpones Credit Settlement

The attention of the government at Washington directed to our foreign trade ambitions is highly appreciated in the trade. Considerable confidence was restored with the announcement of the opening of a billion dollar fund by the war finance corporation to finance export transactions. The removal of the governmental hand in the exchange market has resulted in fluctuations in the value of foreign currencies, and if the exporters find they can obtain suitable loans they undoubtedly will be more willing to grant credits to their foreign purchasers. This will promote the movement to place the dollar on sale in foreign markets, where its value should be held stable. Last week the dollar in Norway was quoted at a premium. Such an advance makes the cost of the American commodity that much higher and tends to frighten off foreign purachesers. It is the same when the value of a foreign currency decreases on the New York market. This instability of the value of the currencies of the world is a serious check to the resumption of trade.

A movement has been started to establish a central bureau under the federal government for the purpose of giving credit ratings on foreign firms. Considerable data is now possessed by the bureau of war trade intelligence, with which a beginning can be made. The movement is as yet in its infancy although exporters are giving the proposal their support. Little resistance in the European field can be expected notwithstanding, because the European governments have import and export prohibitions to protect their credits.

Price Plan's Fate Up to Railroads

Vital Questions Whether Various Departments Will Accept Suggested Prices for Liberal Purchases Put Squarely Up to Government—Intimations President Wilson's Word Sought to Clarify Situation—Iron and Steel Left Hanging

WASHINGTON, April 1.—Successful operation of the Redfield price stabilization plan, under which reduced prices became effective in the iron and steel industry March 21, has encountered a formidable obstacle in the question of whether the railroad administration and other government purchasing agencies will buy at new price levels approved by the industrial board of the department of commerce. This question, when raised by the special committee of steel manufacturers prior to their agreeing to the new schedule, was answered without commitment by the industrial board, but it has been asked again, this time by a committee of coal operators, with such urgency that the fate of the entire plan depends upon the awaited response.

The crux of the situation appears to rest in the railroad administration. The point of the coal men, presented to the industrial board in a meeting March 26 with representatives of the National Coal association, requires an explicit answer from the administration and the willingness and right of that organization to answer favorably seems to require the advice of President Wilson. Official admissions and statements of the true situation are being withheld until the return tomorrow of Director General Hines of the railroad administration, but the unofficial information afloat indicates an exchange of cablegrams between Secretary Redfield of the commerce department, Mr. Hines and the President has taken place.

No Positive Assurances Given

Admission was made today by an official of the industrial board that no assurance had been obtained from any government department, including the railroad organization, that any lower prices the board might bring about would be acceptable by them. When industrial committees, including steel, lumber, cement, brick and other building supply trades, raised the question of what would be the government buyers' attitudes toward the new quotations, the answer was, that since the new levels would be agreed upon at the instance of a government board and ultimately approved by that body, it would be expected that other federal agencies naturally would accept them. This, admittedly, was the only assurance of this nature.

The coal operators, who appear to have taken up a controversy with the railroads' management where it was left off by the fuel administration, were not satisfied with this assurance and, in formal resolutions, declared they would not further cooperate with the industrial board until the railroad administration and other government departments would agree positively to purchase their coal at whatever prices the board might approve. This definite statement required action on the part of the industrial board in order to save the price stabilization plan and accordingly an answer was requested of the railroads. At this point, it is said the President was appealed to by Secretary Redfield in behalf of the industrial board and that it has been necessary for Mr. Hines and the President to get into communication. It is even suggested this question, because of the railroad administration's financial straits, may force the President to call the expected extra session of congress.

The industrial board was busily engaged in conferences last week with producers of cement, brick, gypsum, lumber, building hardware, sand and gravel, boxboard and other products but the results of these meetings are not expected to be announced until after the purchasing question has been answered favorably. One of the earlier conferences last week was with a newly-formed co-operating committee of the various government departments but this meeting was not productive of any further assurances that the departments unqualifiedly endorsed the steel prices or that they would accept new schedules on other products. It was stated the committee would recommend the prices to the departments. Included in the committee were:

Dr. Harry A. Garfield, fuel administration; E. N. Hurley, shipping board; Col. Frank C. Boggs, army; L. McH. Howe, navy; George O. May, treasury; J. G. Lay, state department; C. M. Weld, interior department; C. J. Brand, agriculture department; J. A. Egerton, postoffice department; Cecil Barnes, food administration; M. K. Delattre and Alex Pugh, war trade board; Eugene Meyer Jr., war finance corporation; H. P Willis, federal reserve board; and J. L. Ackerson, Emergency Fleet corporation.

Steel May Bear Brunt

The general impression here is, and it is reflected in private views of certain members of the industrial board, that if the railroad administration's answer is in the negative, the plan will be abandoned and the board will disorganize. This will leave the steel industry as the only trade in which lower prices were effected and, of course, revocation of the steel price agreement could not be expected. Whether the reductions in steel prices alone are sufficient to stimulate business in the steel trade and others as well is a moot question. E. H. Gary, president of the American Iron and Steel institute and chairman of the special committee of steel men who agreed upon the new prices, last week in New York said that "if other lines of business, without delay, shall cooperate in the same direction with the industrial board, as I believe in their own interests and the interests of the country generally they will do, I see no reason to doubt there is great prosperity in front of us."

The coal men's position is the result of a long-standing controversy with the railroad administration which followed a ruling by Fuel Administrator Garfield that coal prices should apply to all consumers alike. This ruling, made soon after the fuel administration began to function, raised the question of car supply, rebates, etc., which had been in effect prior to the war. This in turn led to friction between John Skelton Williams, then director of finance and purchases for the railroad administration, with the result that lower coal prices were obtained but they applied to all consumers. The arrangement continued until Feb. 1, 1919, when the fuel administration suspended operations, and the coal operators, in favor of the war plan, declared strongly for it. In their statement last week they charged the railroad administration had broken faith with them on the point.

The railroad administration, recog-

nized by the industrial board as annually consuming one-third of the steel and coal output of the country, appears more and more to be the factor prompting the general price revision plan. When the scheme was first proposed it was suspected in certain quarters that it was a movement by the railroad administration to find a new point from which it could begin efforts anew to force down steel and other prices. This, of course, was denied by officials of the administration and of the department of commerce, but, the railroads having been unsuccessful directly to get lower prices than $55 and $57 for rails, the opinion persisted the new plan would result only in a new basis for negotiations with the mills. If the administration declines to answer, or responds negatively to the coal association's question, this opinion will appear to have been well founded.

Railroad Body Has Problems

In justice to the railroad administration is must be recognized that its policies apply to some 200 individual companies. After its experience in buying cars and locomotives and its difficulty in getting the railroads to accept them, the administration naturally is skeptical about any general purchase policies which may result in a number of dissensions when it comes to paying the bills. The railroads now are working on a new maintenance budget to enable the administration to find out what is required to bring the average of 1918 and 1919 tonnages up to the average of the three-year test period. This will mean a large outlay of cash in order to keep the tonnage at the average level since materials and lumber cost more than before the government took over the roads.

George N. Peek, chairman of the industrial board, returned yesterday from a business trip to Chicago and Moline. Other members of the board also were out of town the latter part of last week. Secretary Redfield, away until last week, was in the city today. None of these officials would admit the exchange of cablegrams with the President and all said the answer to the coal operators' demand would have to await the return of Mr. Hines tomorrow.

Gary Says New Business Shows an Increase

That there has been a noticeable, though not large, increase in the amount of business since prices were reduced, was stated Wednesday, March 26, by E. H. Gary, chairman of the United tates Steel Corp., and head of the committee of the American Iron and Steel institute that conducted the price conference with the government. In discussing the situation, Judge Gary said:

"Apparently there has been a decided though not large increase in the volume of our business since the approval of the present scale of prices by the industrial board in Washington on Friday of last week. It is not yet time to determine the full effect of the movement inaugurated by the department of commerce under the direction of the industrial board for the purpose of stabilizing business and readjusting conditions from a war basis to a peace basis.

"However, I have great confidence in the plan adopted. If other lines of business without delay shall cooperate in the same direction with the industrial board as I believe in their own interest and the interest of the country generally they will do, I see no reason to doubt there is great prosperity ahead of us."

Asked to comment on published statements, said to have originated in Pittsburgh, that the new schedule of prices determined upon was claimed by some prospective buyers as being too high for certain articles, he replied:

"If there are any who make claims of this kind it is probably because they are not familiar with the present costs of production. Wage rates alone since Feb. 1, 1916, have increased 131 per cent."

When Judge Gary was asked what part of the present cost of production was comprised of labor, he said:

"From the raw products to the finished products in our line, it is probably at least 85 per cent."

Minnesota Ore Tax Bill is Finally Defeated

Forecasts by representatives of the Minnesota mine operators that opposition to the substitute tax bill in the Minnesota legislature was sufficiently strong to defeat the measure proved well founded, final action taken recently by the house resulting in the defeat of the proposal. The advocates of the bill, the Welch-Nonpartisan league compromise, as it was called, were able to marshal but 64 votes while 66 were necessary for passage. Sixty-one votes were cast against the bill. The defeat of the bill means that the Minnesota operators will not be called on again to defend themselves from new tax legislation at least until 1921, the date of the next session of the legislature.

As stated in the March 20 issue of THE IRON TRADE REVIEW the sponsors of the Bendixen bill and the Welch bill did not chance a vote on them as they came from committee and they were referred back to the house committee on taxes and tax laws with instructions to harmonize them or report a new law. The committee dropped the Bendixen which provided for a tax of 4 per cent on the values of all ore produced. The Welch bill provided a tax of 10 per cent on all ore mined. The bill then proposed by the Non-partisan league called for a 5 per cent tax on iron ore royalties. This and the Welch bill were redrafted to incorporate the essential features of both in one bill.

Gear Makers Will Meet in Cleveland April 14-16

Standardization will be the chief topic of discussion at the annual convention of the American Gear Manufacturers association which will be held at Hotel Statler, Cleveland, April 14, 15 and 16. The organization includes in its membership representative companies engaged in making gears in the United States and Canada. Among the papers to be presented will be the following: "Gear Steels," by Dr. Parker, of the Carpenter Steel Co., Reading, Pa.; "Proper Sizes and Materials for Gears," the authorship of which paper has not yet been announced, and "Worms and Worm Wheels," by a representative of the Timken-Detroit Axle Co.

George Baker Retires

Chicago, March 31.—George Baker, who has been associated with the Illinois Steel Co. since its organization in 1889, and who for the past 20 years has held the position of general manager of sales in that company, has, at his request, retired from the active management of the sales department and hereafter will occupy an advisory position in the sales department.

Edwin S. Mills succeeds Mr. Baker as general manager of sales of the Illinois Steel Co. For a number of years Mr. Mills was manager of the sales department of the Carnegie Steel Co., at Cleveland. During recent years he has been a special representative of the Carnegie Steel Co. in Chicago. His long experience in the iron and steel trade qualifies him especially well for assuming his new position. He is a brother of James R. Mills, district manager of sales of the Carnegie Steel Co. and associated Steel corporation companies at Cleveland.

A contract has been secured by the H. C. Weller Co., Jacksonville, Fla., for several thousand tons of heavy relaying rails for export to Cuba.

Pig Iron Output Drops 5.8 Per Cent

Blast Furnace Production in March Shows Decline From February Figure—More Stacks Are Blown Out Making Decrease of 64 in Active Furnaces Since Opening of Year

PIG iron production dropped 5.8 per cent in March, following a decrease of 1.3 per cent in February. The total production of coke and anthracite furnaces last month was 3,067,610 tons, compared with 2,943,347 tons in February, a gain of 124,263 tons. This increase follows the extra number of working days, as the average daily production fell off heavily. During March, the furnaces produced daily an average of 98,955 tons, compared with 105,120 tons in February, a loss of 6165 tons.

Slackening activities at blast furnaces are disclosed by the drop in the number of active stacks. On March 31, 287 furnaces were in blast, against 311 on Feb. 28, a loss of 24 stacks. This decline follows a loss of 19 stacks in February.

The steel works or nonmerchant furnaces produced 2,303,263 tons of pig iron in March. This was a gain of 133,617 tons compared with the February output of 2,169,646 tons. The merchant furnaces showed a loss of 9845 tons last month, the March production amounting to 731,018 tons, while February's total was 740,863 tons.

Both the merchant and nonmerchant stacks registered a loss in the average daily production. In March the steel works furnaces produced 74,299 tons daily, compared with 77,487 tons the preceding month, a loss of 3188 tons. The average daily production of the merchant furnaces for March was 23,581 tons, a loss of 2879 tons compared with the February daily average of 26,460 tons.

Ferro production gained 654 tons. The total output for the month was 27,183 tons, compared with 26,529 tons in February. Spiegel production which has been falling off very rapidly for the past several months amounted to only 6146 tons, 163 tons below the February total of 6309 tons.

MONTHLY PRODUCTION

	1919	1918	1917
January	3,306,279	2,403,227	3,159,839
February	2,947,555	2,318,242	2,649,935
March	3,067,610	3,209,996	3,255,813
Total 3 mos.	9,317,236	7,931,465	9,065,586
April		3,273,355	3,328,061
May		3,451,884	3,413,677
June		3,316,143	3,260,234
Total 1st half.		17,972,852	19,067,559
July		3,408,584	3,337,442
August		3,378,479	3,238,970
September		3,413,223	3,140,742
October		3,482,392	3,296,286
November		3,347,844	3,198,597
December		3,434,114	2,885,380
Total 2d half.		20,464,636	19,097,417
Grand total.	9,317,236	38,437,488	38,164,976

Moving Blast Furnace

The Missouri Iron & Steel Corp., St. Louis, which some time ago purchased the blast furnace of the Jefferson Iron Co., Jefferson, Tex., is now engaged in moving this stack to Brandsville, Howell county, Mo., where it is being erected with new Sterling boilers and much other new equipment. The company states that at the present time the furnace parts and appurtenances thereto are about one-half moved to the new location and over one-third have been re-erected.

AVERAGE DAILY PRODUCTION

	1919	1918	1917	1916	1915
Jan.	106,654	77,523	101,930	102,319	51,323
Feb.	105,270	82,794	94,641	106,157	59,521
March	98,955	103,548	105,026	107,343	66,009
April		109,112	110,936	107,517	70,484
May		111,351	110,119	108,535	73,747
June		110,538	108,675	107,127	78,998
July		109,954	107,659	103,907	82,687
Aug.		108,983	104,483	103,156	89,510
Sept.		113,774	104,691	106,935	94,478
Oct.		112,335	106,332	113,167	100,656
Nov.		111,595	106,620	110,593	101,174
Dec.		110,602	93,077	102,715	103,278
Avg.	103,525	105,293	104,562	106,610	81,022

Good Tonnages

Placed by Manufacturing Trade in Wire for Six Months

Cleveland, April 1.—Buyers of manufactured wire in this territory have responded liberally to the announcement of a $6 cut in this product. A number of contracts of this character covering requirements for six months ahead have been closed in the week and these have aggregated a round tonnage. Much of this buying was done by the bolt manufacturers. While some specifications accompanied these orders, the tonnage has not been sufficient as yet to affect mill operations. Jobbers also are specifying better for nails and barbed wire. Fence business continues good.

Business Could Be Better

Pittsburgh, April 1.—While a fair amount of business, well distributed among the various lines, has come out for wire products since the naming of lower prices, the general report from manufacturers in this district is that trading could be considerably better and yet not be really active. As a stimulus to advance business, the recent reductions have been a failure. The probability that present prices will hold for a while, and that chances are equally as good for a decline as an advance, discourages purchases much in advance of actual requirements.

The extra on galvanized nails over plain nails has been reduced from $2 to $2.50 per 100 pounds to $1.50 to $2.

MARCH PIG IRON

States	No. of stacks	No. in blast last day of month: Mar.	Feb.	Total tonnage made: Merchant	Nonmerchant	Totals: Mar.	Feb.
Pennsylvania	161	107	117	223,753	906,438	1,130,191	1,052,037
Ohio	80	64	67	147,708	604,362	752,070	716,004
Alabama	45	20	24	88,325	80,717	169,042	188,781
Virginia	10	12	12	37,815	.....	37,815	84,010
New York	28	17	18	78,810	100,894	179,704	181,987
New Jersey	5	3	3	23,437	.....	23,437	16,326
Illinois	25	17	20	41,188	244,487	285,675	279,846
Colorado	6	3	3				
Indiana	16	16	16	26,907	299,815	326,722	319,915
Maryland	4	2	3				
Wisconsin	6	4	4				
Kentucky	7	3	4				
West Virginia	4	3	3	28,522	40,176	68,698	64,870
Tennessee	17	8	9				
Washington	1	0	1				
Georgia	2	0	0				
Texas	3	1	0				
Minnesota	3	3	3	34,553	26,374	60,927	56,733
Michigan	3	3	3				
Missouri	1	1	1				
Spiegel—All states	..	..	..	.....	.....	6,146	6,309
Ferro—All states	..	..	..	.....	.....	27,183	26,529
Totals	435	287	311	731,018	2,303,263	3,067,610	2,943,347

New Steel Works Built in England

Latest Ideas Are Embodied in Up-to-Date Plant Including Open-Hearth Furnaces and Blooming, Bar and Rod Mills—Metal is Routed Through Tunnels to Various Departments—Mills Electrically Driven

BY JOSEPH HORTON
British Correspondent of The Iron Trade Review

AS the world is now fairly well aware the war was pre-eminently a steel war. The Kaiser counted largely upon the unpreparedness of the peaceful nations to meet the avalanche of metal which the great German steel works enabled their war lord to hurl at his enemies. At the beginning of the war, Great Britain held the world's third place in steel production, the growth of the industry having been arrested some years previously, mainly by the free importation of German steel. Whether that importation will continue after the war is rather a matter for the politicians to decide; but the great object of the British steelmakers is to be independent of all foreign supplies. Consequently, large extensions are being made to all British steel works with that object. Compared with the productive steel capacity existing before the war, the position has been revolutionized.

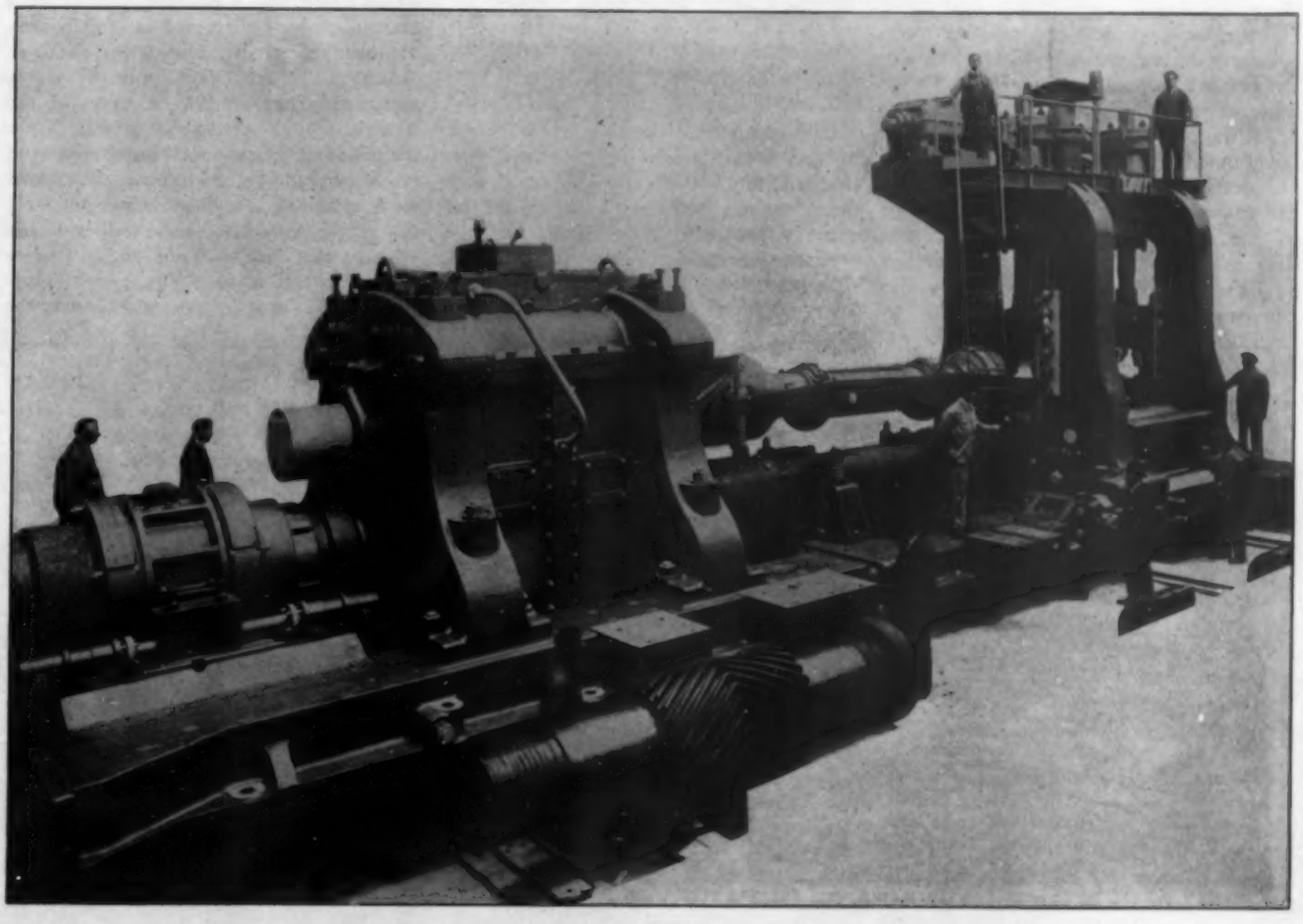
It is now possible to give some details of the way in which the British steel works responded to the sudden calls made upon them by the ministry of munitions. With remarkable rapidity, new programs were devised, new machinery introduced, and the whole range of production widened. The war record of Steel, Peech & Tozer, owners of the Phoenix Special Steel Works, Sheffield, gives an example of the patriotic and intelligent zeal of British steelmakers.

The firm was already the source of supply for all the important works in Birmingham making solid-drawn admiralty tubes, but at the call of the government they started making steel for big shells, gun jackets in large numbers, and variety of other material to help the small but determined British army.

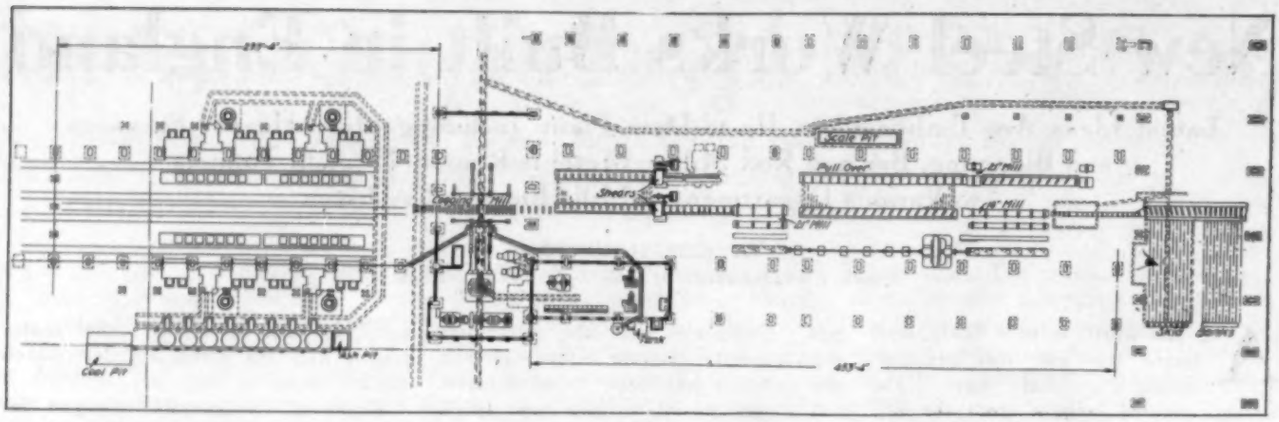
Realizing the greatly enlarged future that lies in front of the British steel trade, they have now added an entirely new steel works representing the latest ideas in works equipment. The company was organized in 1869.

A brief foreword may be devoted to the history of the company. It was founded near Rotherham 50 years ago by Hampton & Radcliffe, with a small bessemer plant of four 5-ton converters. In the seventies the name of the firm was changed to that of Steel, Tozer and Hampton. Mr. Tozer was the master cutler of Sheffield in 1876. Later Mr. Peech was made a member of the firm.

In 1893 the first open-hearth furnace was introduced and was quickly fol-



36-INCH, REVERSING-BLOOMING MILL WHICH IS DRIVEN BY MEANS OF A 6000-HORSEPOWER MOTOR



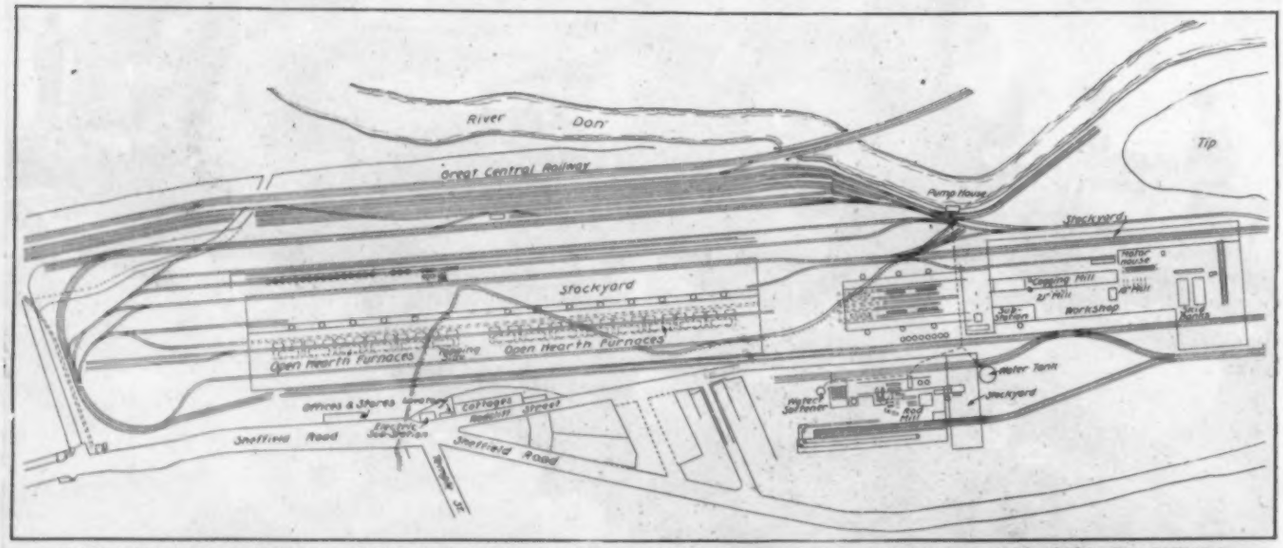
GENERAL ARRANGEMENT OF THE 36-INCH BLOOMING MILL AND THE 21 AND 18-INCH BAR MILLS AT TEMPLEBOROUGH

lowed by two others. The basic open-hearth plant was built in 1905. Seven of these furnaces, each of 50 tons capacity, were started prior to 1913. In the earlier days of the company rails were the principal product, but the open-hearth plant enabled tires and axles, with laminated springs to be added to the products. Of later years the company has produced billets for a variety of uses and, as already mentioned, the Birmingham solid-tube makers for many years have bought their semifinished material practically exclusively from this firm. Since 1889 there has been a steady growth in the production of open-hearth steel, new furnaces being added and existing ones enlarged during the war which brought the present output to about 7000 to 8000 tons per week.

Railway material is made for all the governments of the empire, and for the Indian, South African and South American railways in the Phoenix mills. One of the tragic discoveries of the early days of the war was the fatal shortage of high-explosive shells. Fortunately, the company was in a favorable position to produce these in large quantities. For many months, in 1915 and onward, 30 per cent of the high-explosive shells provided for the army were produced in this plant, while the firm patriotically placed the special knowledge they had acquired from experience at the disposal of any firm doing similar work. Immense quantities of shrapnel also were turned out, while the admiralty steel alone for tube manufacture totaled 600 tons weekly. In addition a large variety of nickel, nickel-chrome, and chrome-vanadium steels were made for airplane engines. Thousands of gun tubes and gun jackets were produced, the total making a most valuable contribution to the country's armament equipment. This achievement was all the more meritorious because it required the provision of special plant.

It is claimed that the firm's output of gun forgings was much larger than that of any other concern, and such gun forgings were still in course of manufacture when the signing of the armistice removed the necessity for further provision of this kind. Among the latest additions to the present works was a 2000-ton hydraulic press started at Christmas, 1914; a second one, 2300 tons, added in August of the following year; a third, 1500 tons, in April of 1916, and a fourth of 2200 tons in October of the same year. All this assisted in the forging of such heavy armaments as 6-inch howitzers, and what is known as the mark 19 type. As a matter of fact, every item of plant added during the war can be put to pacific uses, and will be of enormous advantage for general work.

A comparison of the existing acreage with that acquired for the new works gives an idea of the large scale on which everything is planned. The original Hampton works covered a small area of the present site, and when the war broke out there were only 81 acres occupied. Then, in 1915, 43 acres of the Templeborough site, about a mile from the existing works, was purchased, and in last year an additional 393 acres were acquired, the idea being not only to get a complete and well-laid out steel works, but to build an up-to-date blast furnace plant. The general lay-out of the new works which, may be



SINCE PLENTY OF GROUND WAS AVAILABLE, THE SOAKING PITS WERE BUILT BETWEEN THE OPEN-HEARTH AND ROLLING-MILL BUILDINGS

best judged from the accompanying drawings, represent the latest ideas in the way of economical transportation and production. America will no doubt appreciate the compliment which the works manager, Mr. Deighton, paid the country by making a couple of visits during the time the scheme was being developed.

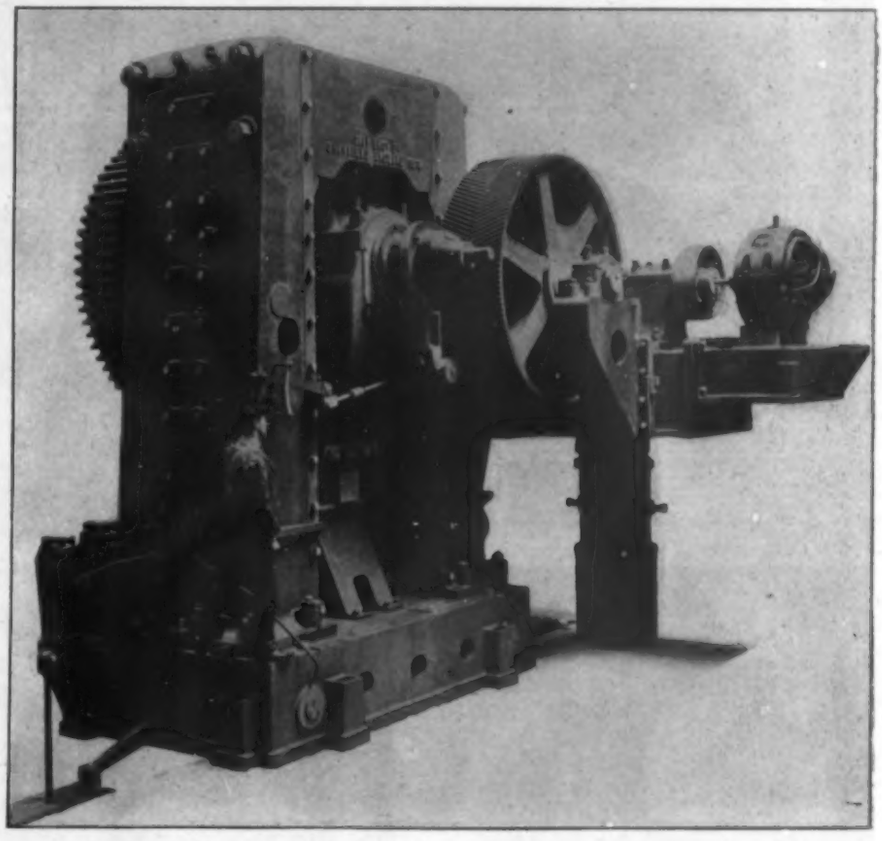
The open-hearth basic plant will comprise fourteen 60-ton furnaces which will be housed in a building, 72½ x 1320 feet, of two spans each. Six furnaces have been completed and are already in operation. The 14 furnaces will add at least 6000 tons weekly to the output, and, assuming the plant continues its production on the present scale this will make a total weekly output of about 12,000 to 14,000 tons. The entire works will find employment, it is expected, for about 6000 workmen when the whole extensions are completed, as compared with 3200 before the war. In several respects, the site is extremely convenient for steel production. The river Don runs through the works, a most valuable auxiliary, in view of the large consumption of water in connection with the generation of electricity. A certain amount of leveling of land has had to be done, but there is fortunately a good bed of rock a few feet down, making a safe basis on which to lay the concrete foundations.

By means of a subway equipped with rails, it will be possible to convey the hot metal from the furnaces to all parts of the works for subsequent manipulation, and trucks will be used instead of fixed pits for casting purposes, so that when the metal is poured into the mold the truck load of ingots can be transported to the soaking pit, which intervenes between the casting department and the mills. The entire area is alongside the Great Central railway, so that pig iron and scrap can be lifted from the railway trucks and deposited, by means of electric magnet cranes, to the stages from which it will be passed into the furnaces.

These cranes are of the most modern type. On the charging side there will be four 4-ton overhead electrical charging machines for passing the raw materials into the furnace, while on the casting side there will be four 100-ton ladle cranes fitted with 25 auxiliary hoists running on the gantry. Above these, 20 feet higher than the lower gantry a second gantry is erected, on which three 15-ton electric cranes are installed for handling the molds on the casting trucks, or pits as the case may be. The steel ladles used will have a capacity of 75 tons each. After the ingots are cast, they will be passed under a hydraulic apparatus for stripping, and then carried further to the soaking pit, situated a short distance from the ingot casting pit. The soaking pit will consist of four 7-hole furnaces, each hole of sufficient capacity to reheat four 3-ton ingots.

The heating of the steel melting furnaces will be effected by means of a producer gas plant of the regenerative type consisting of thirty-eight 10-foot Morgan gas producers with fixed bottoms, and two Appleby gas producers having revolving casings. The charging machines were built by the Wellman, Seaver & Head Co. of London, and the casting cranes by Thomas Broadbent & Sons, Huddersfield. The Morgan gas producers are furnished by the International Construction Co. of London. The ingots in the soaking pits will be manipulated by two 4-ton overhead electric traveling cranes of a special type, supplied by the Wellman, Seaver & Head Co., and these cranes will cover the entire length of the shop which comprises 293 feet, with a width of 83 feet. The soaking pits like the furnaces will be heated by means of Morgan gas producers and the material will be handled by 5-ton electric grab cranes.

The ingots are conveyed from the soaking pit building to the cogging mill by means of electrically-propelled traveling ingot cars, which at the end of their journey automatically tip the ingot on to the live-roller table which serves the mill. The cogging machinery is of a massive type supplied by Davy Brothers of Sheffield, rolls being of 36 inches diameter, and the machinery of the reversible type. The electric motor driving this will have a normal horsepower of 6000 and a peak load of 16,000. The motor-generator set consists of a 3000-horsepower induction motor supplied with current at 6300 volts. The generators are four in number, each capable of giving an output of 1250 kilowatts or a total of 5000 kilowatts with an overload capacity equal to 12,500 kilowatts. This clogging mill, with its electrical equipment, will be served with a 75-ton electric crane built by the Vaughan Crane Co. of Manchester running on a track 197 feet long. On the outgoing side of the mill there will be fixed a set of 10 x 10 electrical blooming shears for the purpose of preparing the billets and blooms for passing on to the continuous billet mill.



10 x 10-INCH ELECTRICALLY-OPERATED SHEAR FOR CUTTING THE BILLETS AND BLOOMS TO THE DESIRED LENGTHS

What may be called the principal feature of this thoroughly modern plant will be the continuous billet mills comprising one 21-inch and one 18-inch unit. These will be situated in sufficiently close proximity to the cogging mill to be continually fed therefrom with the requisite quantity of blooms. The billet mills will be in two sections, one comprising four stands of 21-inch rolls and the other six stands of 18-inch rolls. There will be a skew connecting table between the two sets of stands. In normal working, the blooming mill will reduce a 3-ton ingot to a 6-inch square bloom, which will be passed on, first to the 21-inch continuous mill and then to the 18-inch mill to be reduced to billets 1½

inches square and upwards according to requirements.

The continuous mill will be operated by electricity through an induction motor of 5500 horsepower normal capacity, and an overload capacity equal to 8800 horsepower. The whole of the continuous mills were built by the Morgan Construction Co., Worcester, Mass., U. S. A., and are the only mills of the type hitherto erected in Great Britain. The capacity of these mills will be from 60 to 90 tons of billets per hour according to the size of the billets and with continuous running on the system of a treble 8-hour shift, the output will aggregate 10,000 tons per week. Provision is being made for rolling slabs and blooms of practically all commercial sizes. The 21-inch continuous mill is intended to deal with the various sizes of slabs and billets which may be required. The designers have had in view in the provision of this plant the apparently infinite variety of specifications emanating from British steel users and the machinery is intended to cope with this extremely wide range of requirement. The two-stand 21-inch mill will be operated by a 1200-horsepower induction motor. The whole of the electric equipment of the new works was supplied by the British Thomson Houston Co. of Rugby.

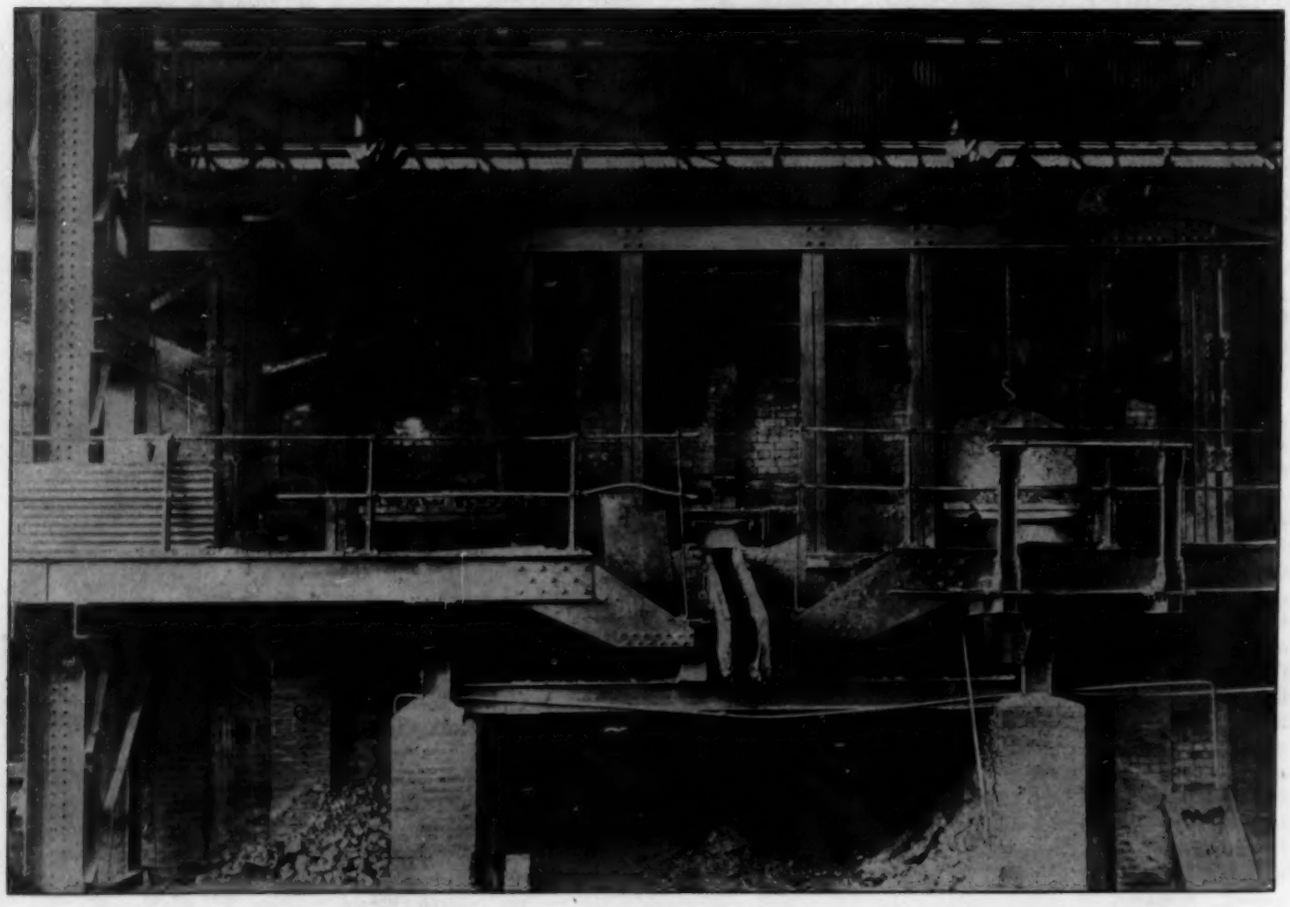
The company is not planning to produce their own electric current, which is to be supplied for the whole of the auxiliary machinery by the Rotherham Corp. from their new power station, now approaching completion. In this matter decided wishes have been expressed by the ministry of munitions, which is encouraging the provision of large power plants, from which various manufacturers may benefit, and the firm has agreed to take advantage of the power plant of the corporation in preference to installing stations of its own.

The hot banks and billet stockyards will be served by 12-ton electric overhead traveling cranes having a span of 85 feet with a length of 300 feet. There is a similar equipment for the bloom stock yards. In this case transport will be effected by a 12-ton crane of 85 feet span operating over a track 453 feet long.

An entirely new development, from which a good deal is expected, is a wire rod mill connected with the billet yards, by railway sidings. The mill is of the latest Morgan type. The expectation is that the weekly output of No. 5 gage wire rod produced from 1¼-inch billets will be at least 1500 tons. This mill will be served from the billet stockyards, the semifinished material being conveyed to the mill by a 10-ton electric overhead traveling crane, having a span of 85 feet and a traveling track of 250 feet. After being weighed the billets will be run into a large continuous heating furnace of sufficient width to accommodate large quantities of billets 30 feet long placed side by side. The furnace is of a sloping character, enabling the billet to slide along the furnace bottom and when sufficiently heated to feed automatically into the first stand of rolls.

The furnace will be heated by gas furnished from two of the latest type of gas machines made by the Morgan company. The gas machine has a revolving grate, and a revolving casing, and is the first of the type to be erected in Great Britain. The wire rod mill consists of 17 stands of rolls, the roughing stands being operated by a 1700-horsepower, cross-compound, corliss steam engine. The finishing trains of rolls are driven by a separate engine developing 1150 horsepower. The diameter of the roughing rolls is 12 inches and of the finishing rolls 8 inches.

The arrangements for dealing with the rods as they come finished from the rolls are of elaborate character. The rods will be produced in double strands and as they leave the last train will be coiled on four Edwards-type rod-laying reels into coils weighing approximately 300 pounds each. A traveling arrangement receives the coils or bundles and



TAPPING SIDE OF ONE OF THE OPEN-HEARTHS. THIS DEPARTMENT WHEN COMPLETED WILL INCLUDE 14 OPEN-HEARTH FURNACES

passes them onto a rod carrier by which they are conveyed to the cooling and loading shed. The carrier has been arranged to enable the ends to be cropped and inspected before loading.

The preparation of the ground and foundation has been in the hands of Frank Hayes, engineering contractor of Liverpool. Steel Peech & Tozer has acquired powerful mining and smelting interests in the northwest of England and Lincolnshire. The absorbed companies comprise Samuel Fox & Co., the Frodingham Iron & Steel Co., and the Workington Iron & Steel Co.; the two last-named concerns are in a special position to furnish practically unlimited supplies of ore or pig iron. When the new furnaces are built the syndicate will be practically independent of outside supplies of raw material. The capital has been increased to ten millions, and the strong financial backing will secure success for the enterprise. It should be added that the firm will have the advantage of the continued services of Mr. E. H. Saniter, the well-known steel expert and manager of the steel department, whose laboratory is one of the most complete and best equipped departments of the kind in the kingdom. The completed concern is expected to take a leading position in steel production among the greatest steelmaking concerns not only of England but of the world.

Relation of Jigs to Machine Tools

IN comparing British and American methods of manufacture, G. H. Hey, in a talk before a group of engineers in Manchester, Eng., stated that although many of the American ideas had been applied successfully under British conditions, others had to be discarded owing to peculiar circumstances.

Portions of Mr. Hey's paper follow:

Every operation in America has its special machine, every machine has its special fixture, and specialized labor is used in practically every section of the engineering trade. Therefore America, compared with her output of engineering goods, has few skilled engineers. American methods no doubt made a great appeal for the manufacture of war material in this country, and in many cases were adopted; but owing to the fact that no time could be lost in waiting for special plants, existing tools had to be adapted. This gave the jig and tool designer unlimited scope, with the result that shells and similar products were produced by machines which had been producing printing and textile machinery, oil and gas engines and every other type of engineering work. The results were satisfactory and showed that British methods, though vastly different from those of America, are in no way behind.

By the addition of special equipment, general purpose machines gave in the majority of cases as good results as single purpose and special machines would have given, and their repetition job being finished, it is possible to convert them for further repetition work. Manufacturing will now have to be taken up more seriously than ever before, and it would appear that specializing will have to be adopted in all classes of work.

Fundamentals of Jig Design

Before beginning the design of a jig or fixture it is necessary to know the material operated upon, the operations to be performed and their sequence, the type of machine available for producing the parts, the limits of error or tolerance to which the parts have to be produced, the output to be required and the type of labor to be employed. This information should enable a decision to be made as to the style and type of jig. If machine tools of obsolete design have to be used, the design of the jig must be such as to produce accurate work on a more or less inaccurate machine. Stops should be provided, and also guides and pilots where necessary, in combination with accurate locating points in the jigs. A simple jig may be adopted with necessary stops applied to the machine, these stops then becoming permanent and available for other jigs. In an up-to-date design these stops and guides are embodied in the machine, and so simplify the design of fixtures.

It is also necessary for machine tool makers to reconsider their designs and attempt to learn the lessons taught during the war. With milling machines, for example, for maximum output rigidity is absolutely essential, and also a flow of lubricant. Yet how many machines have efficient trays and splash guards to enable the flow of lubricant to be made use of and to insure its getting back to the tank? Heavier arbors are necessary and cutters to suit. If the machine tool designer would give a thought to the provision of jigs to be fitted on the machine, and would provide a rigid design so that the micrometer gage on screws could be relied upon, the cost would be saved many times over in the design of future fixtures. The same applies in most other machines.

Drilling machines should be provided with a register hole fitting in the table with a hardened bush for circular jigs, and also bushes for cutter bars and arbors to pilot. An adequate tray, with splash guards around the table, pump, and tank with filter should also form part of the machine. Provision should be made for the rapid and easy removal of chips, the lubricant in the meantime being drained into the tank. More rigid adjustable stops should be provided and consideration paid to many other points which would assist the jig designer materially, while influencing the cost and type of jig and promoting production.

Fool-Proof Fixtures Necessary

Since the introduction of woman labor, jigs and fixtures have been designed and elaborated to meet the new conditions and many new features have been introduced. "Fool-proof" designs had to be considered more than ever. Extra levers had to be added for the operating, and extra power devices to allow for easy manipulation. For example, in drilling through the six throws of an airplane engine crankshaft a jig was designed to hold the crank on its various bearings, and guide bushes were fixed for the holes through each throw. As a jig it answered its purpose, but other elements had to be added to adapt it to more rapid production and to enable a girl to operate it. A large pump was added, with a new base which also formed the tank for the lubricant and carried a small jib for lifting the shafts in and out of the jig. The jig had to be partly encased to prevent the lubricant from running over the operator and the floor; also positive stops were added to prevent too deep drilling, and compressed air was provided to clear away chips. When finished the jig had become a machine tool.

Issues Pamphlet on Copper

The bureau of standards, department of commerce, has issued an interesting monograph on copper. It deals primarily with the physical properties of pure and of commercial grades of copper. The best data and values are given for the various physical characteristics and constants together with a bibliography of the sources from which these values were taken. The effect of impurities upon the properties of copper is discussed as well as the influence of various factors in its manufacture.

Constructive Agitation in Industry

Speakers Who Spurred Shipyard Workers in Behalf of Government Now "Driving the Wedge" Between Labor and Bolshevism With Personal Talks in Plants—Great Americanization Movement is on

BY A. J. HAIN

With Workbench His Pulpit, This Former Pastor Leads in Shop Demonstrations for "Old Glory"

"TRUTH is mighty and will prevail" has a suggestion of irony in it these days unless to it be added "if it is given publicity." The light of truth sometimes grows dim in the murk of misunderstanding; we may not always wait for the fog to disperse, the light must be made stronger. Letting the facts speak for themselves frequently is fallacious; the fact that the world is round took ages in proclaiming itself, generations more in establishing itself, and some people don't know it yet. Facts are elusive; untruths too assertive; the order in which the sages regarded them, the positive truth and the negative untruth, often is found reversed, the truth retiring and conservative, the untruth bold and persistent. "Evil cannot thrive in the light of day" is not sufficient guarantee for the safety of the good. Evil does so thrive because it advertises itself, not for what it stands, to be sure, but for what some persons would like to believe it stands. Evil may wear itself out some day in the far future; confidence in the ultimate puts righteousness in repose. It is all a question of whether we should let the fires burn out, taking chances that we ourselves are not scorched, or put them out; it is faith or action, silence or agitation.

* * *

CONSTRUCTIVE agitation is truth in a militant mood. It is the American spirit, vitalized during the war, still carrying on. It recognizes the fact that destructive influences are at work above and below in the industrial world, that injustices perpetrated

by a few employers are as dangerous to the welfare of the great body of employers and to the country as a whole as are the iniquities of a comparatively small group of fanatics at the other end of the scale. It takes into consideration that a great number of workingmen and women hear only the destructive agitators, that many of them are illiterate and lack judgment and that they must be encouraged to have due regard for rudimentary principles of government.

It does not merely tell the potential anarchist that he is wrong, it does not aim to provoke him to stronger sympathy for his convictions so much as it does to convince him of their illogic by comparison. It inserts the wedge between working people and the preachers of class hatred, while the latter have been driving the wedge between the working people and the employers. It seeks to overcome our omissions in failing to Americanize and educate the foreign-born worker, a long and difficult process, by getting to him quickly, by addressing him as man-to-man, by appealing to his common sense.

A great wave of Americanization is now sweeping across the country, with tons of literature on the subject of industrial problems and bolshevism, personal talks and speeches in factories, offices and club rooms. Is the movement succeeding; is it allaying discontent and making better Americans? Is it misdirected effort, or are the results justifying the enormous expenditure of money and physical exertions? Is it cultivating in the individual a false sense of power and independence? Is it hysteria or helpfulness?

ONE of the most significant features of the campaign is the amount of literature and the number of talks addressed to employers and business men. Much effort apparently is being made to give them an understanding of the basic principles of peaceful human relations; the golden rule has been paraphrased and plastered wherever they may look. The alarm has been sounded everywhere; employers have been warned that they must be fair—and the warning has come from employers themselves.

The suspicion of hypocrisy this may arouse in the minds of readers of advertisements and tracts may be dismissed as unfounded.

The fact is that the great majority of employers no longer can assume responsibility for the acts of the minority, no more than can the majority of wage earners be charged with the violence of the few. When the fair employers have eliminated the unfair who are placing them in jeopardy we may expect to see the wage earners squelching the anarchists.

While some part of this propaganda must be considered as being directed solely at employers a certain amount of the literature is read by the average American wage earner and the impression he receives, no doubt, is that conditions are opposite to what they are. He sympathizes with himself and with his fellow workers when, as he believes, a minority of square-dealing employers take the others to task. He moralizes on thieves falling out and honest men getting their due. And he begins to think that the bolshevist has some reason for his existence.

As an instance of how far-reaching the effect of this may be: A newspaper editor, after reading an advertisement in his own newspaper wherein business men were cautioned to be fair in order to avoid bolshevism, remarked to the writer: "Can you blame the poor devils, when the bosses are blaming themselves?"

This would indicate that a certain amount of the Americanization propaganda is having a reflex effect. It is unfortunate that while it reaches some of the sore spots and tends to correct evils originating at the top it likewise is ammunition for the enemies of good government. Translated into foreign languages, some of the advertisements would make excellent tracts for bolshevists, if set forth as an admission by employers that they are wrong.

The great bulk of the printed matter seeking to cultivate American ideals, however, is aimed at the vast number of wage earners who can read English and who have good judgment when it comes to estimating matters concerning their personal welfare. A great many of these, the more intelligent among them, require no such appeal; they are satisfied. The others would be susceptible to argument and might be swerved. This appeal to the workers, however, does not reach those who speak foreign languages, except as it might be printed in foreign languages, and it all lacks the force of personal contact.

An employer placed in each of his employe's pay envelope a printed slip urging co-operation and loyalty. On payday he found a trail of slips leading from his plant to a saloon. His message had not been read, while his men listened cheerfully to the saloon orator who defended bolshevism.

* * *

EARLY in the war the United States government recognized the potency of personal appeals to workingmen. Manufacturers were will-

ing to go ahead with the program for intensive effort, workingmen were patriotic, but personal efforts of the manufacturers to pursuade their employes to do their best failed in many instances because of the employes' suspicion that the employers wanted such efforts made merely to benefit themselves. Wages increased, but still production did not measure up to expectations.

This was the situation as it confronted a group of leading shipbuilders, manufacturers of war materials and government officials, including Secretary of the Navy Daniels and Charles M. Schwab, at a "gloom dinner" at the Hotel Biltmore, New York, in January, 1918. The manufacturers said they had raised wages and improved working conditions but the record of production did not meet with the government's requirements. They narrated in detail how they had tried to induce their employes to work harder, how they had installed baths and commissaries in their plants, conveyed the workmen to and from their homes; in brief, they had done everything that could be suggested to lighten the burdens of manual labor.

"But have you ever appealed to the *souls* of these men?"

This question was asked by Dr. Charles A. Eaton and astonished the group. What would it avail them to appeal to the souls of men? Dr. Eaton argued the point so earnestly, however, that Secretary Daniels, Mr. Schwab and the others were impressed. He was called to Washington and asked to establish the service section of the United States shipping board, a bureau to direct capable speakers in touring the country and appealing to the souls of men, their manhood and their conscience. This practically was the origin of the speaking campaign for Americanization.

* * *

AFTER the campaign had been launched scores of speakers volunteered to serve the government. Among them were some of the most brilliant orators in the country, men whose wit and eloquence had won them national reputation. Experience developed the fact that not all of them were equal to the unusual task. One of the most distinguished speakers on the American platform failed in his attempt to influence the laborers in the shipyards.

It was found that the work called for a particular type of men, those who did not talk "over the heads" of their audiences but who could arouse them to a high pitch of enthusiasm. A message that would go straight to the hearts of men with keener intellects than those of the shipyards would fall far short of its purpose.

Several hundred speakers were tried out by the service section. Young men with lots of "pep" and plenty of slang, who could talk like gangsters and gyrate like Billy Sunday, gave promise; but after all it was found that the men who achieved the greatest measure of success were those with warm, human sympathies and impulses, whose personalities convinced others of their sincerity, whose talks left an agreeable impression and the desire to accomplish greater things. They might talk fast or slow, sing or whistle a patriotic song, rise to the heights of eloquence or sink to the typical conversation of "the yards," with a cuss for the kaiser and the most hackneyed jest, but they spurred the men to that supreme effort of industry.

* * *

WITH the war over and the service section disbanded a new problem closely related to the general reconstruction arose. Kaiserism no longer loomed as a peril but now was heard the rumblings of bolshevism. Constructive appeals to the workingmen became less frequent but the destructive appeals, all but silenced during the war, recurred in volume.

Perhaps the saving feature of the situation was the fact that the average working man in the United States had money and could support himself and his dependents in comfort, otherwise bolshevism would have rooted deep in American soil as it did in Europe. The high wages paid by manufacturers during the war may have insured them against disaster at the end; the silver bullets we heard so much about may have laid bolshevists low with the Germans.

As reconstruction developed and many problems presented themselves, not the least of which was how to keep men employed and satisfied, the work of the service section was recalled. Manufacturers inquired as to what had become of the speakers. The government's appropriation for the section was exhausted Dec. 31, 1918, and the work could no longer be carried on under federal auspices. The inquiries were made so frequently that finally several of the speakers decided to resume the work on their own responsibility. Certain government officials stood ready to indorse the new movement, but the speakers did not want the indorsement. Organizations of business men to whom the plan was outlined offered indorsements, but still they declined.

"We must be independent," they said. "If the government should indorse our bureau now that the war is over a suspicion of politics might creep in; if the employers indorsed us we might be suspected of representing capital; we represent neither the politicians, capital nor labor; we must preach whole-souled Americanism and we must preach it unfettered."

So the National Industrial Speakers bureau was organized with headquarters at Cleveland, with several of the most successful speakers for the service section forming the nucleus of an organization which now includes seven, and with a message from Dr. Eaton wishing them "God speed" on their new venture.

The aim of the bureau is to quiet unrest and allay suspicion on the part of employes, to create and foster a closer personal relationship and to bridge the gulf between management and men, to reduce labor turnover, to increase production by enlarging the vision of the personnel, broadening the horizon of duty and opportunity, to create the spirit of Americanism and the desire for the English language and American citizenship among foreign-born workers and to offer counter propaganda to the menace of bolshevism.

The plan is to offer a series of talks in industrial plants, each topic being related to the preceding one, each building on the other. This propaganda is not to be considered as a substitute for a square deal in industry, but as an auxiliary to fair management. It is based on the promise that it is not only necessary for the employer to be just but that he must defend himself against evil influences; that he must prove his sincerity; that words from him often are received with suspicion while his employes are willing to listen to "outsiders"; that it is better for the men to hear sound doctrines within the plant than unwholesome teachings without.

* * *

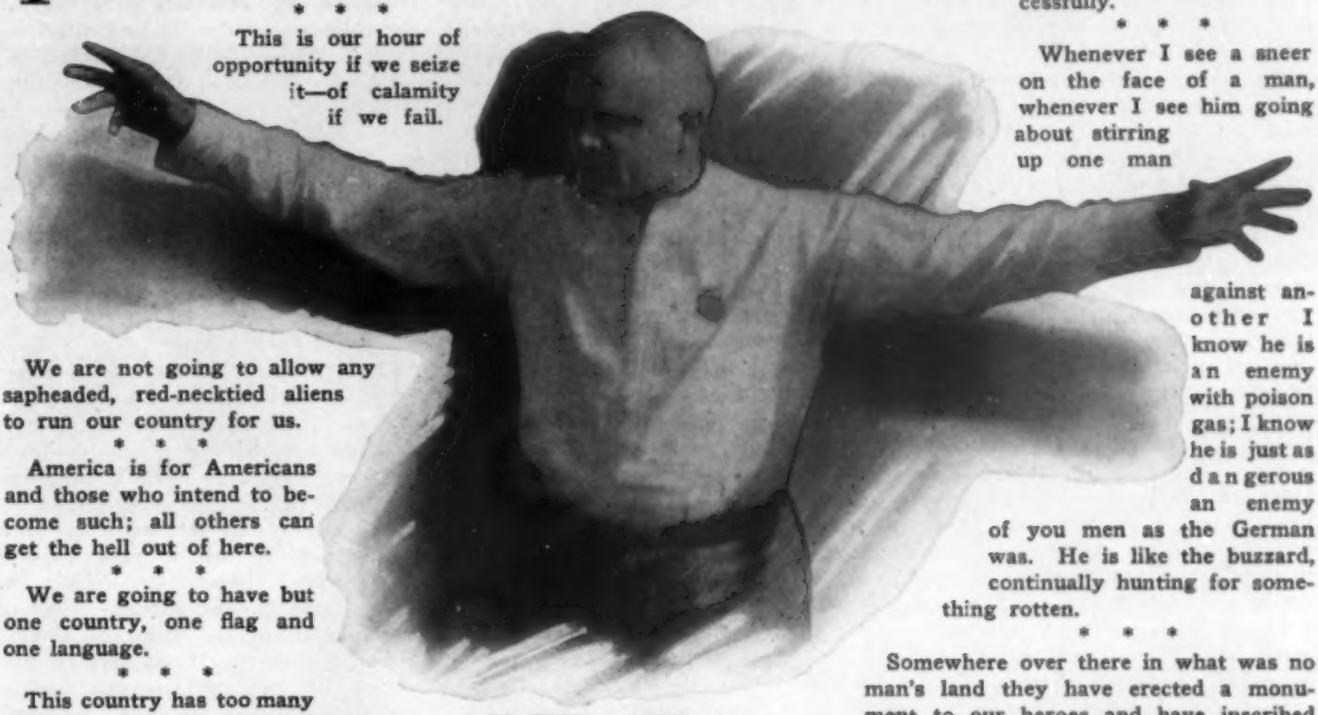
AND the meetings? The shop rallies where Steve and Stanislaws and Tom and Bill learn that their heads as well as their hands have an important part in their daily work? They suggest the court, the schoolroom, church and even the stage in the swiftly changing features of their appeal. Now argument is heard, reason debating with treason with the workingmen as judges. Now the speaker approaches his audience as the teacher instructs her pupils; again the elementary lessons of Christianity find expression, and as for suggesting the stage the speaker is a good actor and he can tell a joke sometimes with telling effect. And still the prize ring might come to mind when one swings his arms and, feinting, deftly plants a blow on the jaw of bolshevism, a blend of acting

Constructicisms from the All-American Speakers

THERE is something in the pay envelope beside money—have you found it?

* * *

This is our hour of opportunity if we seize it—of calamity if we fail.



DR. WILLIS A. MOORE
One of the leading speakers in the Americanization campaign

We are not going to allow any sapheaded, red-necktied aliens to run our country for us.

* * *

America is for Americans and those who intend to become such; all others can get the hell out of here.

* * *

We are going to have but one country, one flag and one language.

* * *

This country has too many citizens and not enough Americans.

* * *

America owes no man a living but offers every man the best opportunity on God's green earth to make a living and a life.

* * *

The agitators who are trying to disturb your peace of mind have a pimple between their shoulders instead of a head.

* * *

Many people are trying to work with one eye on the timeclock and the other on the pay envelope and they are in danger of becoming cockeyed.

* * *

The greatest glory any man can have today is a callous on his hand, and the highest badge of honor is a patch on his pants, provided the patch is on the knees and not on the seat.

* * *

No man's land has been changed from France to America where poison gas is being used by long-haired agitators and soap-box orators trying to stir up strife and class hatred.

* * *

I won't say you are the best fellows in the world because I don't believe it; some fellows are so good they are good for nothing. Whenever I meet the best fellow in the world I always get a bigger lock for my chicken coop.

* * *

An industrial plant to succeed must work as an army works; your sales force is the artillery that prepares the way; you workers are the infantry that goes over the top on production; your management is the staff that plans out the campaign; and every man of you has certain defined duties to perform in order to carry on successfully.

* * *

Whenever I see a sneer on the face of a man, whenever I see him going about stirring up one man against another I know he is an enemy with poison gas; I know he is just as dangerous an enemy of you men as the German was. He is like the buzzard, continually hunting for something rotten.

* * *

Somewhere over there in what was no man's land they have erected a monument to our heroes and have inscribed on it: "They gave their today for our tomorrow." If ever a man felt like being a coward, shirking his duty here, I should think those words would burn into his soul. They gave their today for our tomorrow—and what are we going to make of this tomorrow?

* * *

In Germany a half dozen men had a half million votes because they inherited land or money. Over here, John D. Rockefeller has one vote, by reason of citizenship.

* * *

We have a democracy in taxation, too. The government is taking the bulk of the income of our wealthy men so that the burden of others may be lightened.

* * *

I am proud that this nation was "extravagant" in the war; if your home is burning you wouldn't stop at offering a man 20 or 30 cents to help you put out the fire.

* * *

When I start the day feeling as though I was going to have a grouch I look into the mirror and say seriously to that fellow I see in there: "Now you get the hell out of you." Start the day right! If you feel like fighting just get the hell out of you.

* * *

There was a lumberjack up in Michigan who swung his fists and said to the boys: "I can lick any man in Michigan." No one accepted the challenge. So he swung his fists some more and said: "I can lick any man in Wisconsin." Still no one moved. "Yes, an' I can lick any man in Minnesota," he went on. This time a husky stepped up and hit him an awful wallop in the jaw. When he woke up he said sadly: "'Twas all right; the only trouble was I tuk on too much territory." That was the trouble with the kaiser, he "tuk on" too much territory.

and oratory that generally "brings down the house."

The whistle blows a half hour before lunch or closing time. The men in the shop lay down their tools; the clerks and stenographers come in from the office, the foremen, superintendents, managers and some of the officials mingle with the group. There is a sense of relaxation, of comradeship among the workmen with a few exchanges of glances denoting doubt and suspicion, and not infrequently an expression of total indifference. But at most of these meetings by far the greatest number of workmen show evidence of genuine interest; they understand that the management has brought to the plant a man with a message and they are eager to know what that message is; they consider that it in some way reflects the character of their superiors "in the front office." They may have a preconceived notion that the message is a tirade against labor unionism or a sermon with salve for labor but their ideas are quickly dispelled. They may have erected secret barriers against this intrusion on the privacy of their thoughts; but the barriers go down; the message reaches the inward man.

The evidence of social and welfare work among employes carried on by individual companies clearly is discernible at some of these meetings. The speakers find the resistance is much less than where no constructive work of this kind has been undertaken. The workmen are more receptive, more in accord with the views expressed and more frequent with their applause.

One of the largest corporations in the country having many plants wherein working conditions are considered ideal, a corporation noted for its welfare work, called in the industrial speakers. The first few meetings developed into great demonstrations for the flag and the country; there was no mistaking the fact that the corporation had an approximately 100 per cent force, considered from the standpoint of loyalty to both the corporation and the country. Did the corporation decide that there was no further need for the speakers? It did the reverse—sent them into all of its plants.

So far as known no company in whose works the speeches have been made has disapproved of them, while many have expressed themselves enthusiastically in their praise and have said that a wholesome effect was noted almost immediately. One manufacturer wrote; "I would consider myself a traitor if I could not find it in my heart to approve of the meetings."

Among some of the companies who have engaged the speakers are the National Lamp Works of the General Electric Co., the National Carbon Co., Upson Nut Co., Hydraulic Pressed Steel Co., C. O. Bartlett & Snow Co., Ferry Cap & Set Screw Co., Torbenson Axle Co., Cleveland Twist Drill Co., Grant Motor Car Co., Cleveland Milling Machine Co., all of Cleveland; Liberty Motor Car Co., Detroit; A. Garrison Foundry Co., Pittsburgh; Buckeye Engine Co., W. H. Mullins Co., and the Deming Co., all of Salem, O., and the Black Clawson Co., of Hamilton, O. Meetings were held at the collieries of the H. C. Frick Coal Co., in Pennsylvania, but because of weather conditions others had to be postponed. The speakers have addressed approximately 60,000 workers in 100 industrial plants, mostly in the Cleveland, Detroit and Chicago districts since Jan. 15, 1919. The seven engaged in the work spoke to 20,000,000 workers during the time they were engaged by the national service section.

* * *

THE meeting at the plant of the Cleveland Milling Machine Co., March 14, was characteristic.

"I am here because I love America and you love America; I am here speaking as one American to another, and I do not care where you came from or where your parents came from," began Dr. Willis A. Moore, "the fighting parson," standing on a bench in the midst of several hundred workers. "I am here to give you a 100 per cent message and I am glad that you are here," he went on crisply, "but before we get to that can we sing?"

So they all sang "K-K-K-K-aty,"

Millions of Workers Have Heard Them

DURING the time the United States was at war the seven principal speakers now carrying on the campaign of constructive propaganda addressed 20,000,000 American workmen. Since Jan. 15 they have spoken in nearly 100 industrial plants, principally in the Cleveland, Detroit and Chicago districts, and their messages have been heard by about 60,000 workers. Two of the speakers saw service in France, one of them having been severely wounded and the other gassed. All of them toured the United States for the national service section of the United States shipping board.

Dr. DeWitt C. Tremaine, who traveled 36,000 miles for the service section and who spoke to 6,500,000 workers in shipbuilding plants, speaks on "Playing the Game," laying the foundation for the new campaign with a stirring talk on loyalty to American ideals. Dr. Tremaine's son, a youth who was an expert rifle shot, was severely wounded in France.

Dr. Willis A. Moore, of Detroit, was known as "the fighting parson" and "the chaplain of the second line of defense" to nearly 4,000,000 workers who heard him during the war.

George L. McNutt, of New York, was a minister 20 years ago, but he wanted to get "closer to mankind" and went to work in a shop. Later he became a speaker on the Ridpath Chautauqua circuit. When the United States entered the war he gave two of his sons to the cause and enlisted as a speaker in behalf of Liberty loans and food conservation. He spoke in more than 30 states.

J. A. Yeomans had just completed a tour of all the shipyards along the gulf and Atlantic coast when the armistice was signed. He was formerly associated with the Canadian war lecture bureau but now is making a plea for 100 per cent Americanism.

Private W. E. Stackhouse, son of a distinguished Canadian clergyman, saw service in France with the Eighty-fifth Canadian regiment, suffering the loss of his right leg at the second battle of Vimy ridge. He returned home in April, 1918, came to the United States as a speaker for the national service section, obtained American citizenship papers and spoke to 1,250,000 Americans in this country's cause.

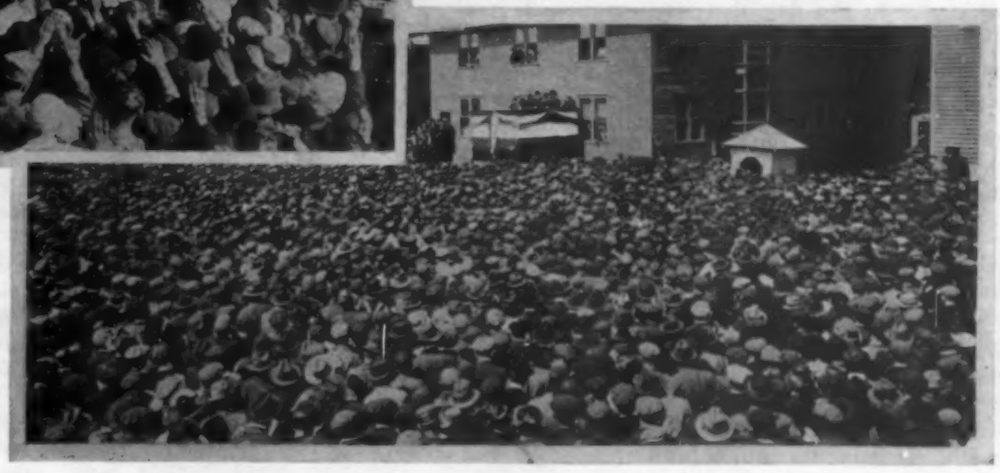
Sergeant Major John D. DeWitt, a member of the New Jersey national guard, who was disqualified from active service on account of age, went to France as a representative of the American Red Cross in 1917. He was in several of the largest battles of the war and was gassed at Soissons, being invalided home after two months in the hospital.

Capt. W. E. Thompson was formerly captain and chaplain in New York national guard.

with Dr. Moore leading. And then "K-K-Krazy Kaiser, you're the only guy that I abhor." Dr. Moore took off his coat and collar.

"You fellows helped to put the old kaiser on the kitchen floor, but he is over in Holland eating Edam cheese, which is too damn good for him!" he remarked. Then earnestly: "The first words I want to speak are words of

Scores of Americanization meetings have been held since war ended. Above, workers at Upson Nut Co., and at the left, those at Willard Storage Battery Co.



Constructive agitation, the speaking campaign for Americanism, began in the shipyards during the war. At the right is a glimpse of a rally at Hog island.

gratitude. I have been all over this country talking to boys of the second line of defense and I have come to thank you for the good work you have done, for I have seen the machines you made in the arsenals and aircraft plants. I remember in the Rock Island arsenal we had a gathering of 11,000 men, some using the very machines you men made here; I shall never forget them, those men, how they put up their strong right hands and said 'We will stick to our jobs; we shall work as soldiers; we shall do all in our power, so help us God!'

"We have just had a song about the kaiser on the kitchen floor but have you ever heard this? Why is the kaiser like a piece of custard pie? Because he is yellow all the way through with not enough crust to go over the top. But he *did* have enough crust to say that America could not stand the test, that we were chasing the almighty dollar, that we couldn't raise an army and that we could not get our men to Europe, and that they could not fight if they did get there."

Dr. Moore then told the men how this country arose to the emergency, narrating a few incidents of the battles in which the American boys participated.

"It was not only those 4,000,000 boys who went to war who won," he continued, "but the 105,000,000 men, women and children who co-operated in that splendid teamwork that made the Germans hold up their hands and yell 'kamerad.'

"Now we are starting at the dawn of a new day. There is another test. It took us about a year and a half to get into our full stride and just then the armistice was signed; war orders were cut off and every manufacturer in this country had to pay the price as our part for the hell that Germany let loose. We cannot get from a war to a peace basis in a month or two months; it may take us six months and it may take us longer than that."

Dr. Moore then told the workmen about some of the problems that are facing the employers, the difficulties they have in keeping men employed and wages up during the period of reconstruction.

"Understanding this thing let us hold steady, because in comparison with the price that Europe is paying we over here in America should pack up our troubles in our old kit bag and smile. Why, the war has not touched us; *we* have our roofs over our heads and our farming lands. We are going to have the greatest prosperity this world has ever known. Nothing can stop it—unless Germany raises hell in America. You know what is happening in Germany and you know what is happening in Russia. The streets of Berlin are running red with blood. If ever there was a just retribution Germany is suffering that retribution today; but the things that are happening in Germany and Russia need not happen in America. We have our channels for free expression, but I tell you frankly that the methods of kaiserism and the methods of bolshevism, 'seize the government, seize the industries,' are just the same. They tried to start that thing in Seattle but the mayor there spoke a few strong words and they were stopped.

"Because of this war we are not only friends but brothers and sisters

with a common purpose, one American family, and we are going to stand together. Any one who attempts to talk class hatred and class strife is not only un-American but pro-German and we have not one foot of ground for a fellow like that. He can get the hell out of here and go back from where he came.

"We are going to stand this new test because we are together, and whatever the problems are we are going to work them out so that every man, woman and child will have a square deal; we are going to work things out in the good American way.

"I am glad to look into the faces of you men, who look to me like the stuff a country as great as America should be made of. Now while we are here together, we will sing a verse of 'America' and we shall pledge allegiance to the flag that we would gladly give our lives for."

All the workmen joined cheerfully in the song.

"I want to ask you men right here: Do you need any other flag other than Old Glory?" continued Dr. Moore.

"No," came the strong response.

"Are we going to meet the test of this new day?"

"Yes," with a roar.

"Then raise you hands and say these words after me: 'I pledge allegiance to my flag and to the country for which it stands, one nation indivisible, with liberty and justice for all.'" The crowd repeated the words with their hands outstretched toward the flag.

"To our boys who met the war test, your boys and mine, who are still over there and will not be back till it's over over there—let us give three cheers!"

Hip-hip-hooray! Hooray! Hooray!

"To General Pershing!"

Hip-hip-hooray! Hooray! Hooray!

"To our allies who have bled, suffered and died for four years, and the great leader, Marshall Foch!"

Hip-hip-hooray! Hooray! Hooray!

"To the 14 who are sitting at the peace table today, arranging plans that will mean the dawn of a new day for humanity!"

Hip-hip-hooray! Hooray! Hooray!

"One more cheer for the new day!"

Hip-hip-hooray!

"I would rather be living in this day than in any day man has ever lived. Great things are going to be done in America. We must all meet our obligations of the new day and that means a job for every man and woman in America, for every one who contributes to the building of a 100 per cent American nation.

"Three cheers for the krazy kaiser (how he would like to have trouble over here in America!) and we will call it 'to hell with the kaiser.'"

And the three cheers that followed were the heartiest of all.

Devise New Scraper for Boiler Tubes

In order to facilitate the cleaning of boiler tubes in plants equipped with forced draft underfeed stokers burning bituminous coal or with the stokers burning small sizes of anthracite or coke breeze, the Combustion Engineering Corp., 11 Broadway, New York, has placed on the market, a scraper designed to remove the cinder deposit from the tubes without interferring with the operation of the plant. Since boilers are usually operated considerably above their normal or rated capacities, a high air pressure under the grates is maintained with the result that small particles of incandescent coke or ash are lifted up through the grates and deposited on the boiler tubes, the lower row suffering most severely. In a comparatively short time this cinder formation materially reduces the space between tubes and consequently the area for gas passage, thereby decreasing the efficiency and economy of the boiler. The tube scraper aims to restore the boiler to its original efficiency.

Cast-iron doors made in sections are placed in the front or rear walls of the boiler setting, giving access to the bottom or lowest row of tubes and by placing these wall boxes midway between rows of tubes, access is had not only to sides and bottoms of the lowest row but to the row above as well. All casting are made sufficiently heavy to support the brickwork above them and when placed under the rear header of a horizontal watertube boiler of the Heine type will support the weight of the boiler also. By simply removing the door by swinging it to one side, the door opening makes possible the entrance of a long iron rod with a clean hook on the end and by passing this back and forth along the tubes a few times the cinder deposit is quickly removed.

Tell How Skilled Men for Army Were Picked

A recent booklet published by the adjutant general's department of the army under the auspices of the committee on the classification of personnel, entitled "The Right Man in the Right Place in the Army," is a brief discussion of the methods by use of which the government was able to supply skilled men for army duties. The bulletin which contains 38 pages with a number of illustrations, is a review of an exhibit of army personnel work which was held in Washington Jan. 13-31.

When the organization of an immense army was undertaken in 1917, a most important question was that of placing the soldiers in the places for which they were best fitted. In the solution of that problem, methods adopted largely from industries were modified and applied to the army. The result has been a great development in the former methods, with the addition of many improvements, which it is believed will be found applicable to the personnel problems of industry now.

The army method of putting the right man in the right job resulted in convincing proof that such a system is a necessity. Figures compiled from the qualification cards of men received in the draft showed that skilled tradesmen are rare and must be conserved for use in positions requiring skill. In each 10,000 men received in the draft, 6208 were in classified occupations, 17 per cent as journeymen and 45 per cent as apprentices, leaving 38 per cent unclassified. Relative to the iron, steel and machinery industry, in every 10,000 men were found 91 blacksmiths, nine chemical workers, 155 electricians, 378 machinists, 317 miners and seven welders. It was found that this system of qualification, by supplying skilled men only when skilled men were called for, conserved the country's supply of skilled workers and at the same time added to the strength of the fighting machine.

Tables Show Proper Size of Motor Fuses

The Westinghouse Electric & Mfg. Co. has prepared an elaborate set of tables showing the proper sizes of fuses to be used with motors of various types and horsepower. Each motor's normal operating current is given by the maker on the nameplate, but the fuses should have a larger capacity to allow for starting current and for momentary overloads. For instance, a polyphase wound-rotor type motor uses 1.25 times the full-load current when starting. A squirrel cage motor, when thrown on the line, uses three times its full-load rating; a single-phase repulsion induction motor absorbs twice its normal current when starting with a rheostat and four times when not fitted with a rheostat. A direct-current motor takes 1.25 times its normal current in starting. These overloads must be borne in mind when selecting fuses if trouble resulting from fuses burning out unnecessarily is to be avoided.

Rolling Mill Research Laboratory

Full-Sized Amply-Powered Experimental Mill Will be Built in Pittsburgh—Important Problems to be Investigated—Large Steelmakers and Builders of Rolling-Mill Machinery Co-operate

THE decision of a number of leading steel companies and builders of rolling mill machinery to co-operate in the establishment of an experimental rolling mill and bureau of rolling mill research under the auspices of the Carnegie Institute of Technology at Pittsburgh, was mentioned briefly in last week's issue of THE IRON TRADE REVIEW. An experimental mill will be built at once. This bureau of rolling mill research will have four distinct functions: (1) To investigate and study the physical and mechanical changes taking place in steel and other metals, and the power consumed, during the process of being rolled at various temperatures and speeds; (2) to distribute the information obtained by means of these experiments among the co-operating firms in order that they may put it into commercial use; (3) to provide laboratory facilities in which the contributing companies may conduct experiments and investigate designs of rolls for the production of new sections which they wish to place on the market; and (4) to offer courses of instruction to students employed by the contributing interests and to those students who are to specialize in this field and are registered at the Carnegie Institute of Technology.

As planned at present the mill will consist of three stands of 3-high rolls driven by a 500-horsepower variable-speed electric motor. The drive and change speed gears will be so arranged that any number of revolutions between four revolutions per minute and 1000 revolutions per minute may be obtained. This wide range of speeds will enable a careful study to be made of the effects of speed on power consumed, and of physical properties of the steel when rolled and treated under varying conditions. Both the mill and the drive will be equipped with a complete set of automatic recording instruments and changes in their readings under the varying conditions of rolling will be recorded. A special stand for measuring the spreading force on rolls is to be equipped with hydraulic cylinders so arranged that the work done to overcome friction at the roll necks is automatically separated from the work done in rolling the steel. Another feature of the mill will be a quick-action stop clutch. By means of this clutch the mill may be stopped instantly while a bar is passing through the rolls.

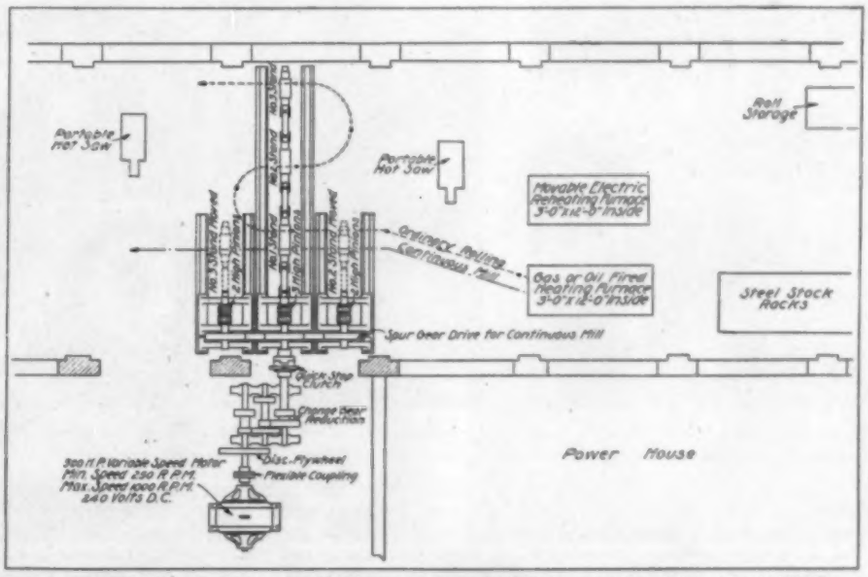
In practical mill work a roller often has to wait days and sometimes weeks before he can catch this condition, as he could not consider the stopping of production while he made a cobble in some particular roll pass that was giving him trouble, and it is mainly by studying the cobbles that the action of the steel can be observed. By stopping the mill and catching a bar in the rolls the exact action or flow of the steel in that particular pass and with the particular set of conditions under which the mill is operating, will be permanently recorded in the section of bar being pinched by the rolls. The rolls will then be opened and the bar withdrawn and studied. By this means it is believed a student can gain more experience in the rolling of steel and knowledge of the flow of steel during rolling in one year than could possibly be gained in many years' work on a commercial mill.

The accompanying illustration shows a diagrammatic layout of the mill and drive. As will be seen the three stands may be mounted on one shoe and used as a Belgian train with No. 1 stand as a rougher, No. 2 stand as strand or leaders, and No. 3 stand as finishers; or No. 2 and No. 3 stands may be moved as indicated in dotted lines so that all three housings are placed in tandem and the mill will operate as a continuous mill.

When operating in this manner only the two upper rolls would be used, the lower ones being left out and the space for their neck bearings filled up. In order to drive the continuous mill a train of spur gears is located just outside the pinion housings, the large driving gears being mounted on an extension of one of the pinion necks. Idle gears between are carried by separate adjustable bearings. By means of a spur gear instead of the usual level gear drive used on continuous mills, the reduction ratio between the stands may be altered by changing only one gear instead of two.

In this manner it is hoped that the actual conditions existing in the mills of the contributing members of the bureau may be easily duplicated in the laboratory, thus enabling any member to experiment on problems arising in his business under conditions which duplicate those in his mills, without excessive expense or without the losses incident to tying up a producing department. The bureau will be under the control of a research committee which will be composed of members appointed by the contributing interests, and representatives of the Carnegie Institute

(*Concluded on page 899*)


Portable Hot Saw
Portable Hot Saw
Roll Storage
Movable Electric Reheating Furnace 3'-0" x 12'-0" Inside
Entrance Rolling Continuous Mill
Gas or Oil Fired Reheating Furnace 3'-0" x 12'-0" Inside
Steel Stock Racks
Spur Gear Drive for Continuous Mill
Quick-Stop Clutch
Change Gear Reduction
Disc Flywheel
Flexible Coupling
300 H.P. Variable Speed Motor Min. Speed 250 R.P.M. Max. Speed 1000 R.P.M. 240 Volts D.C.
Power House

PLAN SHOWING GENERAL ARRANGEMENT OF EXPERIMENTAL ROLLING MILL AT CARNEGIE INSTITUTE OF TECHNOLOGY

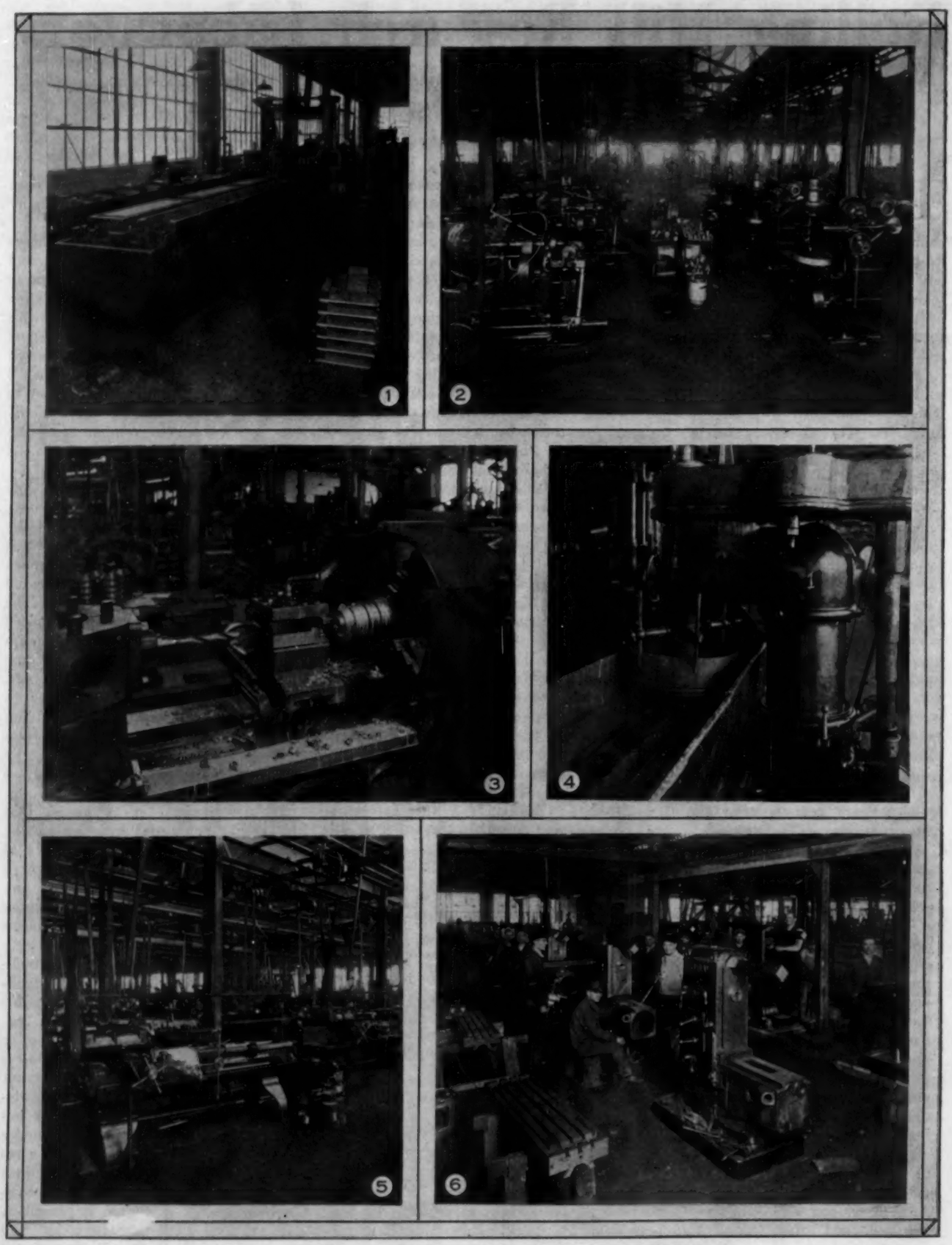


FIG. 1—PLANING LOCATING SLOTS IN MILLING MACHINE PLATENS—EIGHT PIECES ARE LOCATED ON THE MACHINE AT ONE SETTING—FIG. 2—GEAR GENERATING DEPARTMENT WHERE BEVEL AND SPUR GEARS ARE CUT—FIG. 3—MACHINING BEVEL GEAR BLANKS FROM SOLID STOCK IN A TURRET LATHE—FIG. 4—HOW OVER ARMS ARE ACCURATELY FINISHED—THIS WORK IS DONE ON A VERTICAL SPINDLE SURFACE GRINDER—FIG. 5—MANUFACTURING AUTOMATICS ARE USED FOR MACHINING THE VARIOUS CYLINDRICAL PIECES—FIG. 6—ASSEMBLY FLOOR WHERE THE VARIOUS UNITS ARE INCORPORATED TO FORM THE FINISHED MACHINE

Special Operations in Milling Machine Manufacture

BY F. B. JACOBS

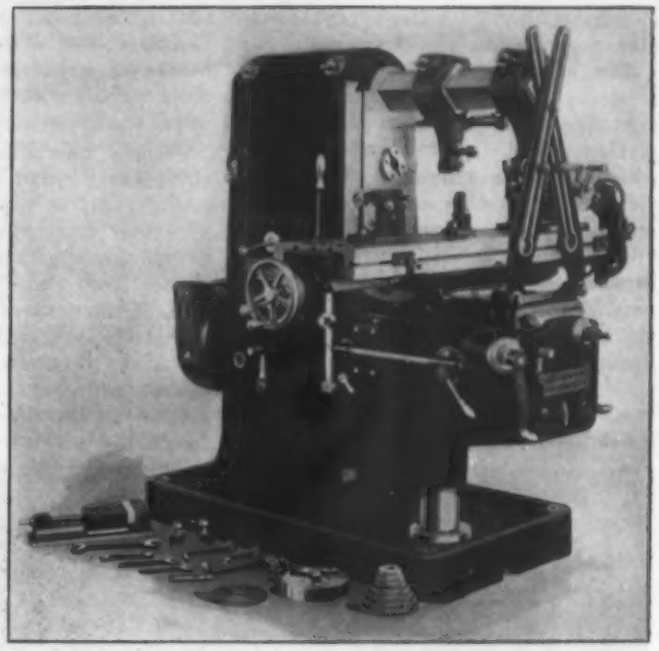


Fig. 7—Cleveland Universal Milling Machine Designed for Heavy Duty

AMONG modern machine tools, milling machines hold high rank for general usefulness. The modern milling machine, which is the result of over half a century of gradual development, fills a position in the present-day manufacturing plant that is of the highest importance. The plain milling machine enables the manufacturer to machine an endless variety of flat work at a minimum expense of time and labor; while the universal type of machine fills a most useful place in the tool room for machining and boring jigs, and milling special angular work such as some types of cams.

To produce accurate work, the milling machine must be built carefully as a slight error in machining or fitting many of the component parts would result in imperfections that are bound to be duplicated, to a certain extent, in every piece of work that is machined. This sounds like a sweeping statement but, as an illustration, let it be assumed that the knee, saddle or platen was carelessly machined or fitted. In this case, the platen would not stand parallel with the spindle. When this condition exists, it is impossible to mill work that will have a 90-degree angle when tested with a true square. Poorly fitted ways often make it impossible to mill comparatively long surfaces with any degree of accuracy; while a spindle that is bored inaccurately is always a fruitful source of trouble. Thus, a milling machine to pass the careful inspection of the present day critical machine tool buyer must be constructed with unusual precision.

The Cleveland Milling Machine Co., Cleveland, makes a specialty of milling machines, both plain and universal. The various operations through which the component parts progress are interesting and graphically illustrate how modern shop methods can be applied to the construction of machine tools with efficient results.

The first step in the manufacture of these machines consists of seasoning the castings This is accomplished by exposing them to the weather for a number of weeks during which time they expand and contract several hundred times due to changes in temperature from midday until midnight. This alternate expansion and contraction gives the countless molecules of which the various castings are composed an opportunity to adjust themselves permanently. Thus, after the machine is finished and in operation, errors in

FIG. 8—REBORING A HOLE ON A RADIAL DRILL—THE LOWER END OF THE BORING BAR RUNS IN A HARDENED AND GROUND BUSHING—FIG. 9—BORING A SADDLE ON A HORIZONTAL BORING MILL

alignment due to changes in molecular construction are eliminated.

The first actual step in the manufacturing process after the castings are thoroughly seasoned consists in machining all the flat surfaces upon which finish is required. The under side of the base is also finished. To many, this may seem an unnecessary operation since this surface is for locating the machine on its foundation only. Experience has proved, however, that if the bottom of the base is finished properly, an excellent locating surface is thus formed for setting the casting for subsequent machining operations.

An open-side planer used in planing

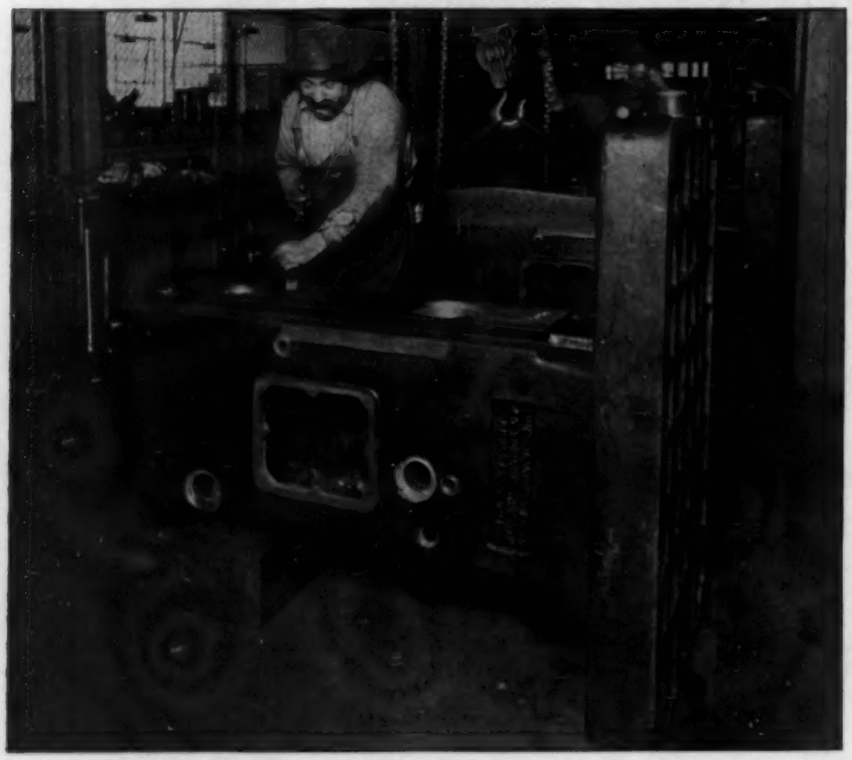


FIG. 10—SCRAPING A MILLING MACHINE COLUMN TO A BEARING TO INSURE A GOOD FIT

base casting is shown in Fig. 12. The operation, illustrated, is taking a finishing cut over the boss that supports the elevating screw pedestal. In planing many other surfaces, heavy fixtures are utilized for locating the castings. Fixtures for such large castings as milling machine bases are, of course, expensive to construct. Once they are made, however, a great saving is effected in production costs. The use of fixtures also insures close duplication of parts. This is important as it saves time in assembly and makes the substitution of broken parts, in case of repairs at some future date, a simple procedure.

In planing operations on the base, the open-side type of planer is used exclusively as this type of machine tool affords easy settings and ample clearance for many operations that otherwise are often carried out under more difficult circumstances which consume unnecessary time.

Planing operations on milling machine bases entail many accurate settings. This is especially true of the vees that carry the knee and the 90-degree angle at the top in which the square over arm rests. It is important that these angles be planed accurately, otherwise much hand labor would be involved in the assembling operation. Gages are used to try the several angles and the dimensions between the several working surfaces.

The platen, or table as it is sometimes called, of a milling machine, whether of the plain or universal type, should be accurately machined as otherwise the finished tool can not be depended upon to produce the best results. An interesting planing operation wherein eight milling machine platens are strapped to the platen of a multiple-head planer is shown in Fig. 1. This operation consists of planing the slots for the guide blocks and the bolts which hold the shoe, dividing head, etc., in position. It is essential that these slots be parallel with the vees on which the platen traves longitudinally in the saddle; otherwise accurate results are often a question of conjecture.

By referring to Fig. 1, it is shown that a center locating piece is interposed between the two rows of platens. This locating piece is securely bolted in place after which both sides, against which the platens are located, are finished. Thus, parallelism between these surfaces and the travel of the planer platen is assured. As this locating piece is used in setting the platens for planing the vees on the under side as well as the slots on the upper surface, it is clear that parallelism is secured. The milling machine platens are securely held in place on the planer platen by substantial straps while other straps are used to keep the platens against the center locating piece.

Roughing out and finishing the flat surfaces on the platens is carried out by methods used by every mechanic in planing flat surfaces. Especial attention is given to planing the vees, however, as this saves time that otherwise would be necessary in fitting when the machine is assembled. The desired angle is obtained by setting the planer head over by its graduations and further accuracy is assured by testing with reliable angle gages.

In planing the slots, three tools are used simultaneously on each row of platens. These are set the required distance apart by means of size blocks and fed down by means of the automatic down feed until the required depth is obtained. Two cuts are taken, one for roughing and another for finishing.

The several holes in the base are finished by boring. A special fixture placed on an upright drill is used for this operation as shown in Fig. 13. The boring fixture is of rigid construction to assure accurate results and the several tools used in finishing the holes are guided by bushings. Thus, all the castings machined are duplicates. The boring fixture saves a large amount of time that otherwise would be spent in setting up the casting for boring each hole individually. As Fig. 13 shows, the fixture is securely bolted to the base of the drill.

After bolting in place, the base of the fixture is tested with an indicator revolving in a holder rotated by the drill spindle. In case the indicator shows that the fixture is not square with the spindle at all points, it is shimmed up at the required places until accuracy is shown by the indicator. The fixture generally stays in place for many weeks at a time, but in case it is necessary to remove it for any purpose, it is carefully tested after being again placed in position.

Fig. 8 illustrates another boring operation. Here one of the holes that was located and bored in the previous fixture is being rebored. This work is done on a radial drill; the boring

bar being supported at its lower end by means of a bushing plate, part of which is shown under the casting, resting on the base of the drill. The tools used for both rough and finish boring operations are of special types, machined or set to the required size. Thus expensive cut and try methods on the part of the operator who does the boring are eliminated. All holes are tested with accurate plug gages to make sure that they are of the correct size before the boring operation is considered complete.

Boring Platen Saddles

The two boring operations just described utilize vertical boring principles which generally are more economical when working on comparatively large castings. The horizontal type boring machine, however, is used for many boring operations with excellent results. Such a boring operation is shown in Fig. 9. In this case the work consists of boring part of a saddle for a universal milling machine. The work is done by means of a substantial boring bar supported at its outer end by the bracket shown at the extreme right. In this operation, the work is securely strapped to the boring machine platen and located parallel by means of the T-slots. All boring operations are carefully planned, and the type of machine used depends upon ultimate results gained from the data thus obtained.

Work on the Knees

There are several important machining operations on the milling machine knee for this member not only forms the vital unit between the upright and the saddle but carries a feed mechanism unit as well. The flat surfaces of these members are finished on the planer after which the several holes are bored. These boring operations are carried out on the radial drill, all locations being derived by means of special boring fixtures. Four of these fixtures are shown in the foreground in Fig. 11, while one of the fixtures is shown in operation on the radial drill at the left.

How the Vertical Grinder is Used

The over arm on the Cleveland milling machine is a distant departure from ordinary designs as it is square. The object of this is to secure proper alignment at all times between the outer arbor support and the spindle. This feature is designed particularly for precision boring operations. This member is roughed out on the planer; a suitable allowance being made for the finishing cuts which are taken on a vertical surface grinder. This operation is illustrated in Fig. 4. The finish left by the grinding wheel is what a mechanic would term "fine" while parallelism between the two opposite surfaces, which is of the utmost importance, is assured. These pieces are measured with micrometers for parallelism and the correct thickness, while a true square is relied upon to test the angles which must be 90 degrees. Otherwise the piece could not be accurately fitted in place in the 90-degree vee which is shown on the top of the base illustrated in Fig. 8.

In the building of machine tools, the manufacturing automatic lathe plays an important part in machining shafts, spindles, gears, etc. A view of the automatic lathe department at the Cleveland company is shown in Fig. 5. The machines in the foreground are turret lathes. Many of the rotating parts, especially main spindles, require accurate machining. As this work is of a routine nature, however, once a machine is set up for a given operation any number of duplicate parts can be made if the operator uses reasonable care in gaging his work from time to time. All important cylindrical parts are finished by grinding, this being the final machining operation.

The modern milling machine utilizes a number of gears, both spur and bevel. These gears must be accurately chucked out, turned and cut, otherwise they will prove noisy in operation and short lived. The operation of turning bevel gears from bar stock on a turret lathe is shown in Fig. 3. As all the work is done at one setting of the bar stock, concentricity between the hole and the outer surface is assured. The tools used for chucking out and reaming the hole are carried in the turret while the facing, forming and cut-off tools are located in the revolving head on the cross slide.

The teeth of all gears entering into the construction of Cleveland milling machines are generated. This is done to insure correctly formed teeth while the automatic features of the machines used reduce production costs to a minimum. Part of the gear generating department is shown in Fig. 2. The machines shown at the right are gear shapers while those at the left are gear planers.

To insure maximum wear, all gears are case hardened, the holes being afterward finished by grinding. In this grinding operation the gears are located by the pitch line to insure quiet running and freedom from cramp.

No matter how carefully the component parts of any machine are made, accurate results in the finished tool cannot be assured if the many operations necessary in assembling the various parts are carried out in a

FIG. 11—SEVERAL JIGS USED IN BORING MILLING MACHINE KNEES IN THE FOREGROUND—AT THE LEFT BACKGROUND IS A RADIAL DRILL SET UP FOR A BORING OPERATION ON THE KNEE

haphazard manner. Assembly of machinery of any kind is an operation calling for considerable skill which is developed only by long practice. The reason for this lies in the fact that such operations are of a manual nature.

The first assembling operation on the base, knee, saddle and platen consists in scraping the flat wearing surfaces to a bearing. This work is done wholly by hand as shown in Fig 10. Instead of scraping two parts directly together, each piece is scraped accurately to a master surface plate. The operation of scraping is simple in itself, and consists of coating the surface with red lead, rubbing a surface plate over this surface and scraping away the high portions with a hand scraper until all parts of the surface bear evenly on the master

FIG. 12—PLANING A SEAT FOR AN ELEVATING SCREW BOSS ON AN OPEN SIDE PLANER

plate. It is necessarily slow work, the time to scrape a given surface depending largely on how accurately the previous planing operation was done.

A milling machine consists of several units which are assembled separately, after which the various units are incorporated in the machine. Part of the assembling floor is shown in Fig. 6. After each machine is assembled it is subjected to a rigid inspection. Gages and indicators of various kinds are employed to test the accuracy of the platen, spindle and other important members that must be located within close limits. Each machine is given a long running test to make sure that all bearings are in proper running condition. Later a test is made on actual work. In this test, pieces of steel and cast iron are securely located on the platen and several milling cuts are taken to insure the machine being in proper condition to handle accurate work.

These machines are finished to give a uniform and neat appearance. All cast iron surfaces are freed for iron oxide before filling and painting. This is to insure the paint staying in place. Otherwise it might peel off after the machine had been in use for a few months.

The Cleveland milling machine is a constant speed type with 16 changes of spindle and feed speeds. Speeds and feeds are controlled by two levers of the ball-joint type similar to an automobile gear shift. All changes for both speeds and feeds are obtained through sliding gears only. Both are automatically lubricated.

The column is of rigid construction and is a complete box section. The base and the column are cast in one piece and are semisteel. The casting is ribbed and tied together with heavy vertical and horizontal walls. All adjustments on the bearings are made from the outside. The dovetail knee slide extends upward to the over arm, this offering ample surface for clamping the attachments. The depth of the column was carefully determined in order to place the spindle and the shaft bearings at the correct distances apart to secure the maximum rigidity.

The knee is especially designed to withstand all the weight that is put upon it in doing heavy work. The knee as well as the column has a dovetail slide. The bearing of the saddle is on the flat wide surface. The narrow slide acts as a guide only. There is no bearing in the center of the dovetail slide. This eliminates chances of having it marred by the operator laying wrenches or tools on the top of the knee. The bearing of the knee on the column is carried well above the top of the saddle slide. The feed box as well as the knee is entirely closed, eliminating any possibility of chips getting into the feed mechanism on the inside of the knee. The elevating screw is large in diameter and in one piece. The table is machined all over, to keep its alignment. The bearings on the table are at the top of the saddle. This method secures a large bearing surface. These bearings are automatically lubricated by rollers in the saddle. The bearing on the saddle is also at its widest portion and both saddle and table bearings are taken up with long taper gibs which are provided with adjusting screws at both ends to take up the wear.

The square over arm provides alignment of the arbors and maximum rigidity of the arm pendants. With the square over arm it is impossible for the operator to place the arbor supports on the over arm and on the arbor in any other way than exactly in line.

On the flanged spindle is a face keyway, into which hardened steel jaws are inserted for driving the arbor as well as the face mills. It is unnecessary to remove these at any time to change from the face mill to an arbor as the driving is done by the hard steel jaws. The strain is therefore taken off the taper hole to drive the arbors. The spindle is provided with a positive lock that enables the operator to loosen the arbor nuts without difficulty.

All bearings in the column and knee are flooded with lubricant. This system is entirely automatic. The reservoir containing the oil has to be filled but twice during the year. To circulate cutter lubricant a centrifugal

FIG. 13—BORING A MILLING MACHINE FRAME—A MASSIVE JIG IS USED FOR LOCATING AND GUIDING THE BORING BARS

pump has been embodied in the design. This pump operates only when the spindle does. Therefore, it is not necessary to shut off the cutter lubricant when changing or measuring work.

Power is transmitted through a constant speed drive pulley which is so designed that it requires no loose gears on the spindle. All shifting of gears is done on the secondary shafts below the spindle. The starting or stopping lever can be operated from both sides of the machine. The single pulley running at constant speed for the drive is protected by belt guard and so constructed that it can be adjusted to any angle. Extensions can be added to it. The spindle reverse is contained within the machine so that right or left-hand cutters can be used. All the speeds, feeds, and other driving mechanism is self-contained within the machine.

Failures of Machine Tool Drives

Are Due Largely to Motor Characteristics as Statistics Covering Five Month Period Tend to Prove—Performance Curves for Reversing Planer Drives Are Compared

BY H. W. TICE

ONE feature in connection with the subject of motors and controllers for machine tool drives has received very little attention in the discussion of this subject in recent years. I refer to the service records of the latest types of motors and controls on our machine tools of today.

We have collected some very interesting data on this subject and feel that it is of equal importance for the manufacturers of machine tools and electrical equipment to be in touch with these records; to know just how the equipment is standing up in actual service and to know some of the problems which the operating engineer is up against in keeping the equipment moving during a period of maximum production, such as we have just passed through. To illustrate this point let us consider the subject in the following order: *First*, definite figures which will show the percentage of motor failures on machine tool drives; *second*, problems relative to the selection and location of the equipment which have a direct bearing on the service records; *third*, undesirable features in motors and control that are responsible for high maintenance costs and frequent delays in production; *fourth*, reversing planer drives and the factors that govern the producing power of a given drive.

We will choose a period of five months, from July 1 to Dec. 1, 1918, to show the percentage of motor failures on machine tool drives. These figures are taken as a standard of the maximum service we may expect with the present equipment when called upon to produce at a maximum rate.

Number of Motor Failures

Our records show a total of 950 armature failures during this period. Of this total number, 36 per cent represents machine tool motors and auxiliary motors in machine shops, 39 per cent represents crane motor failures and the remaining 25 per cent is miscellaneous motors used in steel mills. In this paper we will consider only that portion of the 36 per cent of failures represented by machine tool and auxiliary motors which have occurred in one of our machine shops containing a total of 832 motors, aggregating 7195 rated horsepower. These failures are tabulated in Table I. This shop does not represent the best nor does it represent the worst condition that you will find throughout the works; it is a good average condition. It contains less than 10 per cent of the total number of motors in the plant.

Referring to Table I you will note, first, the machines are classified according to the general type of machine, such as lathes, horizontal and vertical boring mills, milling machines, slotters, etc., and a group of auxiliary machines, such as oil pumps, drill presses, grinders and emery wheels; second, motors are grouped under three headings: i. e., variable and constant speed alternating motors; third, the total number of motors and the rated horsepower on each type of machine; fourth, the percentage of the total number of motors and the percentage of the total failures in each group of machines.

This tabulation also shows that the total failures for a period of five months are 7.8 per cent of the total number of motors. At this rate the failures per month are 1.56 per cent, or a total of 18.72 per cent per year. It might be well to point out that the average for this shop is 7.2 horsepower per motor, with a maximum of 25 horsepower used on reversing planer drives. The smaller sizes range from ½ to 5 horsepower and are used on auxiliary machines such as drill presses, oil pumps and grinders. Constant-speed direct-current motors represent 60 per cent of the total failures and variable-speed direct-current motors 40 per cent, leaving a perfect record for alternating-current motors for this period.

First, let us consider what I have called auxiliary motors in machine shops, such as drive oil pumps used in connection with boring mills, drill presses, grinders and emery wheels. This group of motors is 24 per cent of the total number and represents 12 per cent of the total rated horsepower. Furthermore, these motors are responsible for 41.5 per cent of the total failures. In this group 89 per cent of the machines run at constant speed, 75 per cent of which are equipped with direct-current motors and the remaining 25 per cent with alternating-current motors. The constant-speed direct-current motors are responsible for all the failures in this group. This means that you can reduce the total failures approximately 40 per cent by using the more reliable alternating current motor on auxiliary apparatus in machine shops where the quantity and quality of the output is

This article is an abstract of a paper, "Machine Tool Drives: Motors and Controllers," by H. W. Tice, efficiency engineer, electrical department, Bethlehem Steel Co., Bethlehem, Pa., presented Jan. 4, 1919, before the Philadelphia section of the Association of Iron and Steel Electrical Engineers.

Table I

Tabulation of Motors and Failures in Machine Shop No. 4, July 1-Dec. 1, 1918

Type of machine	D. C. variable speed	D. C. constant speed	A. C. constant speed	Total	Rated H. P.	Per cent of motors	Number of failures	Per cent of failures
Lathes	101	47	0	208	1940.5	25.00	10	15.40
Boring, horizontal	50	31	0	81	485.5	12.50	14	20.20
Mills, vertical	13	10	0	23	404.5		5	
Milling machines	13	98	83	194	1990.0	23.30	1	1.54
Oil pumps	0	65	0	65	283.0		12	
Drill presses	11	51	0	62	146.0	24.00	7	41.50
Tube grinders	11	0	1	12	155.0		1	
Emery wheels	0	35	26	61	347.0		7	
Slotters	20	0	0	20	116.0	2.40	4	6.15
Planers	14	5	22	41	709.0	4.90	2	3.09
Shapers	13	0	0	13	77.5	1.56	0	0
Miscellaneous	47	0	5	52	541.0	6.25	2	3.08
Total	353	342	137	832	7195.0		65	

65 failures = 7.8 per cent of the motors for a period of 5 months.
Same rate = 1.56 per cent of the motors per month.
Same rate = 18.72 per cent of the motors per year.
Average H. P. = 7.2. Maximum H. P. = 25. Minimum H. P. = ½.

not dependent upon variable speed and flexibility, but upon the reliability of the equipment.

To emphasize this point still more, I will reduce this item to dollars and cents. This will be in accordance with the ideas of the purchasing department or persons not directly connected with electrical problems, who must pass on the expenditure of money for improvements. From an electrical standpoint the main object of these improvements is to reduce high maintenance costs, to eliminate delays and thereby reduce the cost of production.

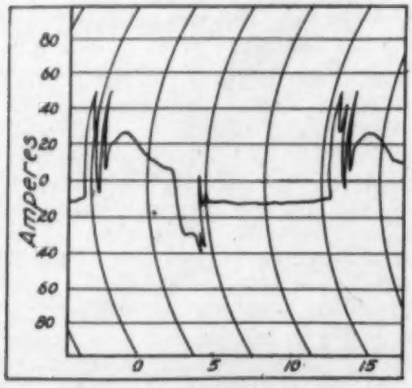


FIG. 1—LOAD CURVE FOR 36-INCH PLANER WITH 25-HORSEPOWER MOTOR

The calculation will be based on the group of auxiliary constant-speed motors in this machine shop. In this group the average rating is 4-horsepower per motor. The total time required to repair 27 armatures at an average of 16 hours per armature is equal to 432 hours at a labor cost of approximately $260. An average of 40 per cent of these armatures requires new windings in addition to commutator repairs. Cost of material will be approximately equal to $215. The total cost of labor and material for repairs only will be about $460 for a period of five months, or $95 per month, making a total of $1140 per year for an item representing 18.2 per cent of the total number of motors, 8.35 per cent of the total rated horsepower and 41.5 per cent of the total failures in this shop. This item of $1140 per year, in addition to two or three times this amount for loss in production due to delays, is a good argument for eliminating 40 per cent of the total failures by using the more reliable alternating-current motor on constant-speed auxiliary machines where the output depends mainly on the reliability of the drive.

Let us consider the case of lathes and boring mills, 70 per cent of which are equipped with variable-speed direct-current motors, automatic starters, field rheostat control, with field relays for 10 horsepower and above, operating switches to close the dynamic braking circuit on the off point and for reversing duty, when desired. This is the most desirable equipment to use from the standpoint of maximum production, where this factor depends upon the flexibility of the system, ease of speed control and quick stopping. I will take up the discussion of the advantage to be gained by the use of this type of drive and control, as it has been demonstrated that the variable-speed motor with the automatic starter is superior for this class of work.

A large percentage of motor failures with this equipment has been due to the "heart" of the direct-current motor failing, i.e., the commutator. Carbonized mica segments are the chief cause of these failures. This is a problem which still requires a great deal of attention in order to make the direct-current motor more reliable. The cause of this pitting or carbonizing of mica segments has been attributed, first, to improper slotting of commutators; second, to the use of abrasive and high friction brushes, causing copper dust to collect in the slots; third, to the use of unsuitable brushes, causing carbon dust to collect in the slots; fourth, to oil on commutator from leaky bearings. This argument is quite true; any one of the above defects may be sufficient cause for having carbonized mica.

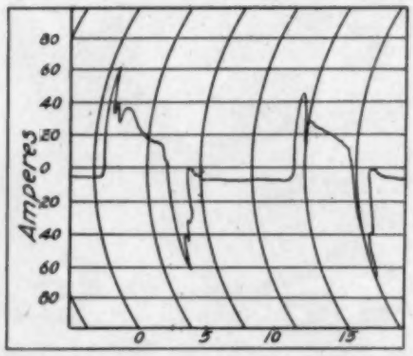


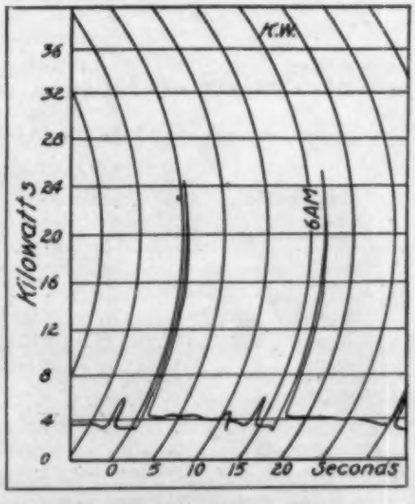
FIG. 2—LOAD CURVE FOR 36-INCH PLANER WITH 50-HORSEPOWER MOTOR

Brushes play an important part in the successful operation of motors and we cannot lay too much stress on the importance of selecting the proper brush to use under certain conditions. However, with commutators properly slotted and proper brushes applied, we still have our troubles with carbonized mica, provided the motors are operating in places where a great deal of oil is used.

Undercutting commutators and using a nonabrasive brush is the proper course to follow where the peripheral speed of the commutator is sufficient to keep the slots free from oil and dirt and in cases where machines are not subjected to oil vapor, dirt and other undesirable foreign substances, such as result from the use of lubricants for cutting tools. In cases, however, where oil and dirt are present, undercutting commutators is not to be advocated, particularly on variable-speed machines, which have a wide speed range. The peripheral speed of the commutator at the low speed is generally not sufficient to keep the slots clean and for this reason it is better to use a flush mica commutator with proper brushes. This eliminates the possibility of oil and dirt collecting in the slots.

Automatic starters for machine tool motors are sent to the repair shop at the rate of 15 per cent per year; minor repairs made in the field such as replacing of contacts are not included. The 15 per cent represents actual burnouts, where new resistance tubes and accelerating coils are required, particularly for the last accelerating step. Burned out resistance is due generally to poor contacts, oil or dirt causing the plungers to stick, or a burned-out holding coil. If the contacts weld together on closing, the machine tool operators will invariably put paper between contacts or block out the operating elements in some manner to run on resistance. This is not only true in case the operating elements fail but it also has been taken advantage of by operators to obtain lower speeds in case of hard spots in the material, or poor tools, requiring slower speeds.

A suggestion for the improvement of automatic starters is to provide one cover for the entire panel so arranged that it can be opened only by the use of a master key. The separate covers do not serve the pur-



LOAD CURVE FOR PLANER WITH 15-HORSEPOWER ALTERNATING-CURRENT MOTOR

pose for which they are intended because they can be removed readily by the operators, and are seldom put back in place, thus leaving the operating elements exposed. In case of a single cover for the starter all the operating elements are exposed when the cover is opened and the necessary inspection adjustments can be made. This in itself will have a tendency to invite closer inspection, because it does not require removing three or four covers to follow the sequence of the contactors. After making the inspection, one more move will completely enclose the case and insure the inspector that tampering with the operating elements by machine tool operators is no longer possible. I believe this point will be strongly supported by operating engineers.

Comparing of Motor Types

There is one more point which I wish to cover in connection with machine tool drives and that is the subject of reversing-planer drives. Recently we installed a large number of belt-driven planers equipped with alternating-current motors. These planers were bought to do a certain class of work. At the same time we had two types of direct-current drives on the same class of work—one equipment with dynamic braking features and the other with a mechanical brake on the motor shaft. The question might be raised as to the comparative amount of work which could be turned out on these planers in a given time and the factors that govern this output.

A performance curve was taken on each type of drive under actual operating conditions. The curve in Fig. 1 was taken on a 36-inch planer equipped with a 25-horsepower direct-current motor with a speed range of 250-1000 revolutions per minute and automatic control panels with dynamic braking features. You will note on the curve the maximum peak is only 50 per cent of normal current on the motor and the current at full speed cut is 12 per cent of normal.

The curve in Fig. 2 was taken on a 36-inch planer equipped with a 20-horsepower direct-current motor with a speed range of 250-1000 revolutions per minute and automatic control panel, without dynamic braking features. A mechanical brake is mounted on the motor shaft. The function of the mechanical brake is to set only in case of failure of power. Normal operation consists of plugging the motor without braking. The maximum current is 75 per cent of normal with an average of 10 per cent of normal current at full speed cut.

The curve in Fig. 3 was taken on the 36-inch belt-driven planer equipped with a 15-horsepower alternating-current motor, speed 720 revolutions per minute. This is a two-speed planer, change in speed being obtained by gear shifting. This curve was taken on slow speed and shows a maximum peak equal to twice the normal load on reversing belts for return stroke and 80 per cent of full load on reversing for the cut stroke. Full speed cut shows an average load equal to 68 per cent of full load on the motor.

The net results of these three operations as derived from the curves are assembled in Table II. Let us consider each item to show how it is related to others in determining the efficiency of the planer cycle. Items 1 and 2 show the length of the stroke and the actual cut in inches. Item 3 shows the speed in feet per minute of the cut and return strokes calculated from the total distance the planer traveled at full speed in a given time. Item 4 shows the total time in seconds required for a complete cycle of the operation. Items 5, 6 and 7 are the component parts of item 4 and show the time consumed in stopping, reversing and accelerating, the time for full speed return, and the time during which the planer is actually operating at full speed cut. Item 8 is the net result, the end efficiency of the operation, or the percentage of the total cycle, the direct-current equipment with mechanical brake on the motor shaft being at the rate of 55.6 per cent and the direct current equipment with dynamic braking features at the rate of 50 per cent.

Table II

Reversing Planer Drives

	Length of stroke	Length of cut	Speed ft. min. cut	Speed ft. min. return	Time for cycle, seconds	Full speed cut, seconds	Full speed return seconds	Stop, reverse, and accel., seconds	Time efficiency of cycle
36-inch planer ..... 25 H. P. D. C. motor	59	53	33.8	45	16.22	8.11	4.05	4.06	50.0
36-inch planer ..... 20 H. P. D. C. motor	63	60	34.8	72	13.73	7.64	3.13	3.10	55.6
36-inch planer ..... 15 H. P. A. C. motor	79	72	30.9	125	16.25	12.50	2.80	0.95	77.0

Factors of Power Drive

The factors which enter into the producing power of a given drive are: (1) The ratio of the actual cut to the length of the stroke and to make this a maximum quantity accurate stop is required; (2) to increase the percentage of the total stroke during which the machine is operating at full speed requires quick acceleration; (3) to increase the percentage of the total time of the cycle during which the planer is operating at full speed cut, it is necessary to consider two items: First, time consumed in stopping, reversing and accelerating; and second, maintenance of maximum permissible speed on the cutting stroke. The hardness of the material and the quality of tool steel used are the factors governing the maximum cutting speed. Where planers are required to do a large variety of work, variable speed features are desirable for maximum production.

Research Laboratory

(*Continued from page* 891)

of Technology. This research committee will lay out and oversee all work and transact all business in connection with the bureau. The entire department is to be operated on a no-profit basis and all funds subscribed for this work and not used, will be returned to the subscribers.

Among the many problems on which research work can be done and covering which more information is badly needed by rolling mill engineers, are: Separating forces acting on rolls and housings; influence of speed on separating forces and on roll train resistance; ratio of roll-neck friction to total roll-train resistance; influence of roll diameter, steel temperature, roll velocity and form of projected contact area on spreading; and greatest deformation without injury, while being rolled.

It is planned to demonstrate to students who are studying rolling mill engineering and roll pass design the following phenomena: Effects of separating or closing the rolls; effects of "crossing" the rolls; metallurgical effects of many light passes; metallurgical effects of a few heavy passes; rolling of shapes, and merchant material; study of plastic deformation and lines of flow; and forward slippage in rolling.

Pittsburgh Base Up to Price Board

Comptroller Warwick's Reply to Secretary Baker Shows No Formal Contracts Raising Steel Price Custom Yet Have Been Presented—Indications Point to Favorable Outcome for Industry When Matter Finally is Considered

WASHINGTON, April 1.—The comptroller of the treasury and, through him, auditors for the war department and, in turn, army disbursing officers gradually are being brought to the view that basing points and freight differentials are trade practices which, having been long established, should be recognized by the government in making payments on vouchers for materials delivered by steel manufacturers and other producers under contracts placed by the war department in the heat and confusion of war. As W. W. Warwick, comptroller of the treasury, has pointed out, no formal contracts raising the question have yet been submitted for his final approval or disapproval but indications again are favorable that if a proper agreement involving freight equalization is submitted to him the trade custom will be fully relieved of the disfavor in which it is now held by the government through earlier decisions by the comptroller.

If the practice is officially recognized, it will be on the strength of the fact the price-fixing committee of the war industries board accepted the recommendations of the industry, which included the freight differential custom and which in turn were approved by the President. Comptroller Warwick, in his latest discussion of the subject, in a letter to Secretary of War Baker, said "where the prices were made in this form by one of the government war price-fixing boards during the war emergency, the responsibility therefor must be upon such board." At the time the comptroller gave his decisions of last November, in which he refused to authorize payment of vouchers covering freight differentials, the price-fixing committee's views on the question had not been made clear to him.

Has Not Passed on Point

After the comptroller had disapproved of freight equalization on the grounds that the government could not pay for a service it had not received, test vouchers were submitted by ordnance disbursing officers but Mr. Warwick did not again pass upon the point on which a ruling was desired. He refused to authorize the payments because the contracts under which they were to be made were not properly executed, coming under the class of "informal contracts" for which congress and the President gave the necessary relief, the administration of which has been lodged with the war department. It is understood to be the view of the comptroller that where the freight equalization question arises under contracts to be adjusted in accordance with the terms of the new law it is up to the army claims board to consider the problem as a claim in each case.

It was in planning to make these settlements that Secretary Baker wrote the comptroller on March 1, the day before the new measure was approved by the President. In his letter the secretary said, among other things:

"Section 3648 Revised Statutes provides that payment shall not exceed the value of the services rendered or of the articles delivered. Under a contract on the above basis there is no payment for a service rendered but only a payment for the value of an article delivered. The fact that the price may vary from time to time would seem not to violate the statute so long as the price did not exceed the value of the article and there was a clear method for computing the exact amount. The reasonableness of the purchase price so fixed does not seem open to question, it having been authorized by the President."

In reply, the comptroller told the secretary consideration now must be taken by the comptroller's office of the informal contracts act. He also says the "question involving a basis price is not one of future importance, the impression being that Mr. Warwick recognizes that, except during the emergency of war, contracts with the government usually stipulate a flat price which, while involving freight differentials, does not show "a clear method for computing." Continuing, the comptroller's letter says:

"Under existing conditions it would seem that a contract for delivery by a contractor at a definitely indicated plant of the contractor would not justify the fixing of a price (no transportation by the contractor being involved) on the basis of existing or future freight rates between other places. And under existing conditions of competition between contractors, as required by law, an agreement on a definite price for delivery at one designated place would not be other than the ordinary course of government business. * * * *

"The question of the meaning of provisions, somewhat differently worded, for the fixing of prices on a basis point has been before this office several times. In 25 Comp. Dec., 406, November, 1918, the subject was discussed but the form of agreement was such that it could not be recognized as justifying additional payments. In the case in 25 Comp. Dec., 411, November, 1918, the agreement was for a price f.o.b. Pittsburgh, Pa., and not for a price f.o.b. Pittsburgh, Pa., basis. It was also not a legally executed agreement. In more recent cases, upon the request of disbursing officers for decision, this office was compelled to hold that as the alleged contracts were not made in compliance with law the question of the amount to be paid was not properly before the office for decision. (Decisions of Feb. 13 and 21, 1919.) I assume that in addition to the provision of the contract fixing the price of the commodity on a basis point, as stated in your letter, other provisions stipulate for delivery at some other point either named or the manufacturer's plant generally, and that shipment is to be made to a point designated or as may be designated from time to time, the government to pay the freight.

"The condition preserved is that while shipment in fact takes place between two points payment for the commodity is to be made at a price equal to the cost to the government if shipment had been made from some other point, so that the contractor will receive in addition to the basis point or tentative price, an amount equal to the freight from the basis point to destination less the freight from shipping point to destination or suffer a reduction if that should result in any case.

"The price thus made up shows on its face it lacks a *quid pro quo*—that the contractor is to receive in part something for which nothing is given—the difference in the amount of the freight between the respective points, one point at least being unknown when the contract is made.

"Its purpose can only have reference to the relations between manufacturers of the particular commodity, and has no reference to the necessities of the other contracting party.

Board Bears the Responsibility

"The authority for paying a price so fixed may well be questioned but where the price was made in this form by one of the government war price-fixing boards during the war emergency, the responsibility therefor must be upon such board.

"The rulings in 25 Comp. Dec., 406 and 411 will not apply to such cases as may be found to come within the herein assumed state of facts. It is to be regretted that one or more of the contracts referred to were not submitted with your letter, so that this office could decisively advise you upon their terms and I would suggest such submission, as in the absence of a contract of the class referred to by you no more definite decision can be rendered and such views as are expressed must necessarily be confined to what is stated in the submission and cannot be for general application."

Government Fosters Foreign Trade

Plans for Lower Rail Rates, Creation of $1,000,000,000 Fund to Finance Business Abroad, and Formation of Committee Co-ordinating All Federal Work on Exports Among Latest Developments

WASHINGTON, April 1.—That the government is giving considerable thought to extending foreign trade for American business interests and has taken increased action in that direction is shown by a review of events of the past week following the recently announced reduction of ocean freight rates. First was the announcement by Walker D. Hines, director general of railroads, that the railroad administration will put into effect as soon as the tariffs can be prepared and filed new and lower rates on export traffic to China, Japan, Australia and the Philippine islands, applying from territory from the Missouri river and east through Pacific coast ports. Among commodities to be given advantage of these reduced rates are agricultural implements, miscellaneous articles of iron, car wheels and axles, boiler iron, cast iron pipe, wrought iron pipe, roofing iron, machinery, including grading and roadmaking equipment, sewing machines, oil well supplies, railroad equipment, such as axles, beams, couples, passenger and freight cars, and locomotives, passenger and freight automobiles and parts, pig iron, iron castings, pig lead, wire rope, spelter, steam or hot water heating apparatus, wheelbarrows, zinc plates and sheets and vehicles.

Next was the announcement of a fund of $1,000,000,000 held by the war finance corporation for financing business abroad, and immediately following this came the statement from the department of state telling of the organization of a co-operating committee on foreign trade.

In connection with the war finance corporation fund, regulations are being prepared to cover advances to export business concerns of sums up to $50,000,000, probably at 5¾ per cent for a maximum of five years on satisfactory security, the exact nature of which has not been announced. It is believed that collateral to the extent of 125 per cent of the loan will be required.

Many informal applications for information or advances have already been received from individual exporting firms or representatives of export associations being organized under the Webb-Pomerene act.

Three influences, it has been stated, are responsible for preparation by exporters to make extensive use of the fund:

FIRST—European countries, which will need American materials for reconstruction, have neither gold nor credits to pay for their purchases, and their inability will be increased when the United States stops making loans to the allies.

SECOND—Foreign exchange rates, following removal of artificial government influences by Great Britain, France, Italy and the United States, have produced a situation in which American goods would cost foreign purchasers much more than their value in dollars at present if purchases were made in cash. Consequently it is necessary that American exporters sell on credit, and the finance corporation fund will provide a means of pooling credits under government supervision.

THIRD—American banks cannot legally advance as large sums as may be required to finance large export operations or ordinarily make advances for more than 90 days, while a year or 18 months will be required on export credits.

With regard to the organization of the co-ordinating committee announced by the department of state, an order authorizing such a body was formally signed by the President on Feb. 28, shortly before his return to Paris. This action, taken in connection with the order of March 3, issued by the President, authorizing the department of state to take over the functions of the war trade board, gives that department wide powers relating to the supervision of foreign trade.

The co-ordinating committee includes representatives of all the governmental offices which deal in any way with foreign trade matters. Its duty is to formulate conclusions, and to harmonize and co-ordinate all governmental activities connected with foreign trade to safeguard the economic future of the nation. Among the most urgent questions to be treated are tonnage allocations and marine freights, cable and radio facilities, reconstruction loans and Latin-American loans, consortiums for buying in Europe, labor and immigration, "key industries," like the dye industry, and strategic raw materials.

The committee will provide advisory and supervisory machinery of government executives for unifying the work of further extending and developing the business interests of the United States in foreign channels. Neither the committee as a whole nor its subcommittees will deal with specific cases of foreign trade interests except as they may be brought to its attention by different government offices now handling these matters. American business men therefore will continue to deal as heretofore with the various pre-existing agencies of the government.

Agencies of the government actively co-operating in this plan include the department of state, the department of commerce, the shipping board, the treasury department, the department of agriculture, the department of labor, the navy department, the war department, the federal trade commission, the tariff commission, the railroad administration, the interstate commerce commission and the postoffice department.

May Settle All Trust Cases Out of Court

WASHINGTON, April 1.—Published reports that the department of justice proposes to abandon the dissolution suit against the United States Steel Corp., appear to be altogether speculative. In the light of events, however, this line of conjecture is not unnatural and in the absence of official expression from the government either confirming or denying the reports they, no doubt, will be given a certain degree of credence. At the same time it is difficult to comprehend how the government can consistently abandon this particular proceeding without taking like action concerning similar suits.

Perhaps the report that has been

given the most serious consideration is that the government may withdraw suits it has pending against the Steel corporation and other corporations and adjust the cases out of court. This, it is contended, might be done without breaking down the Sherman law, as apparently would be the result if complete abandonment of cases brought under that act was determined upon. Another alternative mentioned is that the administration may ask congress to revise the Sherman act, making it less drastic and enabling the department of justice to clean its slate of such suits as that pending against the Steel corporation, which, according to general opinion, are weak from the point of the government. Attempts to relax the law, it is well recognized, would be the subject of sharp and probably long debate in congress, whether they would or would not be successful.

Government Nullifying Sherman Law?

Reducing further and vitally the so-called weakness of the government's case, is its initiating a price agreement program with manufacturing interests during the war, which is being pursued at present. This continued plan of virtually nullifying the Sherman law, or, at least, its temporary suspension, quite naturally has prompted the prevailing discussion as to the attitude the government may take with regard to litigation brought under that act.

In fairness to the department of justice it may be said that it has not conceded that the Sherman law has been either nullified or suspended. But to all intents and purposes it is nonexistent under present circumstances, as it was during hostilities, in so far as it inhibits agreement upon prices, and some well-versed attorneys, who have no direct interest in the situation, insist the government itself has been the principal violator of the law in view of the fact that it was at its request that the prices were determined upon and are being proposed.

This being so, it is the common view that the government has at least placed itself on an extremely embarrassing position in any attempt it may continue to enforce the Sherman law as it now stands.

The fact that prices recently agreed upon between the industrial board of the department of commerce and steel producers were announced with the understanding that they represent minimum levels at which sales should be made is construed by some as to be especially marked in conflict with the Sherman law. This, again, was done at the suggestion of the government.

It will be recalled that these prices were made public a few hours after a conference was held between Chairman George N. Peek and William M. Ritter, of the industrial board, and Attorney General A. Mitchell Palmer and G. Carroll Todd, the assistant attorney general in charge of anti-trust cases, who passed upon the agreement. Their conclusion has not been announced and it is reported will not be, at least not in the near future. Obviously the department of justice was not opposed to the price agreement and must have interpreted it through some method not disclosed as not being in violation of the Sherman law. This apparent attitude of the department of justice becomes all the more perplexing in view of the statement made some time ago by Mr. Palmer's predecessor, Thomas W. Gregory, that manufacturers must make no move in violation of the antitrust laws. The position of Mr. Gregory was thought by many to be unfavorable to an agreement between the government and manufacturers as to prices, which contrasts with that of Mr. Palmer evidently.

In the event the government does call up its case against the Steel corporation, it is a question when this will be done. It has been argued once before the supreme court and was set down for rehearing in 1917, but was postponed upon the outbreak of war between the United States and Germany. One reason assigned for the postponement was that, had the case been decided against the Steel corporation, the navy department would have been shut off from this immense source of war production because of the limitation in the naval act of Aug. 29, 1916, to the effect that the department should not make purchases of steel, armor, etc., from any concern which was a "party to any conspiracy to monopolize the trade or commerce of the United States," etc.

Fire Brick Reduced

Pittsburgh, April 1.—A cut of approximately 10 per cent from the recent quotations has been made by some of the larger producers of fire brick, effective today. This action, which is voluntary on the part of the manufacturers, comes in response to the recent reduction in iron and steel and indirectly contributes to the effort of the industrial board of the department of commerce to restore normal business and industrial conditions in the country. First quality Pennsylvania fire clay brick now are quoted at from $36 to $45 per 1000, f.o.b. works, against $40 to $50, recently and $45 to $55 at the end of last year.

Growing Volume

Shown in Various Coal Tar Products —Motor Fuel Active

New York, March 31.—Outstanding among developments in the eastern coal tar products market is a continued good demand for naphthalin and motor fuel. The activity of the dye industry and drug trade is the dominating factor in the demand for naphthalin and business of increasing proportions is in prospect for the next several weeks. Due to the greater activity in the dye industry, toluol also is coming in for better demand.

While little change is noted in the demand for motor fuel, buying is sufficient to allow for the free movement of benzol, toluol and solvent naphtha.

Coke Oven By-Products

Spot

Per Gallon at Producers Plant	
Pure benzol	$0.20 to .25
Toluol	.25 to .35
Solvent naphtha	.20 to .25
Per Pound at Producers Plants	
Phenol	No market
Naphthalin, flake	$0.08½ to .09½
Naphthalin, balls	.10½ to .11½
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$4.45 to 4.55

Contract

Pure benzol	$0.20 to .25
Toluol	.25 to .35
Solvent naphtha	.20 to .25
Per Pound at Producers Plant	
Phenol	No market
Naphthalin, flake	$0.08½ to .09½
Naphthalin, balls	.10½ to .11½
Per 100 Pounds Producers' Plants	
Sulphate of ammonia	nominal

This in conjunction with a fair demand for solvent naphtha, benzol and toluol in the pure state is sufficient, to keep supplies from accumulating. The spot and contract market on benzol continues at 20c to 25c per gallon; on toluol, 25c to 35c; and on solvent naphtha, 20c to 25c. While naphthalin, apparently, is gaining strength almost daily, no change in price has yet gone into effect. Spot and contract sales are being made at 8½c to 9½c, in flakes, and 10½c to 11½c, in balls.

Aside from a little buying for export, the market on sulphate of ammonia is quiet. This is attributable largely to the falling off in demand from the fertilizer industry, whose buying for the spring trade now is about ended. Prices, however, are unchanged, spot still being quoted at $4.45 to $4.55 per 100 pounds in carload lots. The market on phenol is dull, with prices still holding somewhere under 15c.

February Exports Fall Slightly

Decrease in Pig Iron is Marked While Shrinkage in Semifinished Products is Small —Imports of Pig Iron and Steel Increase—Exportation of Building Materials Shows Gain—Month's Total 344,180 Tons

EXPORTS as well as imports for the month of February show a decrease over those for the month of January. During January the exports amounted to 371,570 gross tons, an increase of 14,929 gross tons over December, while the February figures of 344,180 tons indicate a loss of 27,390 gross tons over the preceding month or a loss of 12,461 gross tons when compared to the December tonnage. Pig iron exports of 36,757 gross tons in January fell to 20,840 tons in February while semifinished material declined from 11,594 gross tons to 10,407 gross tons.

A reason for these declining figures may be found in that February was a 28-day month compared to the 31-day months of January and December. With this as a basis and computing what the exports would have been for the longer month with the actual daily average as the daily export, it is found that the total export would have been 380,300 gross tons or an increase of 9000 gross tons over January. Similarly with pig iron and semifinished material, the figures would have been 23,020 gross tons and 11,500 gross tons, respectively, the former a decrease of 13,000 gross tons and the latter practically the same as January's figure.

Exports of scrap, which were almost negligible in January, made a still further drop from 632 gross tons to 217 gross tons while the imports correspondingly fell from 12,209 gross tons to 4681 gross tons. Imports of pig iron increased from 1852 gross tons to 3110 tons and ingots, blooms and billets from 1493 gross tons to 2232 gross tons. Steel rail imports increased from 435 gross tons to 1090 tons while bar iron and structural shapes showed increases.

Export increases are seen in building materials for foreign use, steel rails, the most important of which are steel bars, structural iron and steel, wire, nails, pipes and fittings, railroad spikes and horseshoes.

IMPORTS AND EXPORTS
(Gross Tons)

1916		
January	15,824	360,102
February	20,279	368,980
March	15,159	438,649
April	20,176	384,452
May	32,114	538,657
June	26,885	515,214
July	14,774	502,330
August	23,255	571,401
September	25,559	643,762
October	30,169	588,892
November	42,545	554,219
December	44,134	580,988
1917		
January	40,910	608,281
February	24,947	449,099
March	37,943	606,559
April	48,213	519,397
May	26,479	582,303
June	29,080	629,305
July	28,859	346,393
August	26,129	503,075
September	19,058	499,067
October	14,310	571,868
November	13,995	473,549
December	14,642	653,344
1918		
January	12,475	490,259
February	12,941	438,848
March	14,345	379,924
April	11,371	462,887
May	14,387	488,515
June	13,913	418,605
July	11,511	453,789
August	12,520	512,104
September	8,440	473,688
October	15,744	426,767
November	11,582	471,427
December	28,996	356,641
1919		
January	16,913	371,570
February	12,302	344,180

IRON ORE IMPORTS
(Gross Tons)

From:	February, 1919	February, 1918	Eight months ending February, 1919	Eight months ending February, 1918
Spain	.....	4,663	49,566	23,470
Sweden	.....	.....	.....	17,718
Canada	2,447	80	93,428	158,490
Cuba	25,092	11,000	377,865	361,957
Oth. countries	500	.....	1,787	1,634
Total	28,039	15,743	522,646	563,269

IMPORTS VARIOUS ORES AND FERROALLOYS
(Gross Tons)

	February, 1919	February, 1918	Eight months ending February, 1919	Eight months ending February, 1918
Ferromanganese	2,620	1,417	12,164	17,252
Ferrosilicon	102	238	5,262	4,836
Manganese ore	21,819	56,289	315,790	412,418
Tungsten-bearing ore	1,535	482	9,286	3,386
Nickel ore	1,947	3,102	37,814	37,718
Total	28,023	61,528	380,316	475,610

IRON AND STEEL EXPORTS
(Gross Tons)

	February, 1919	February, 1918	Eight months ending February, 1919	Eight months ending February, 1918
Pig iron	20,840	10,711	229,286	310,418
Scrap	217	310	1,401	21,494
Steel billets, ing. and blooms	10,407	166,807	825,751	1,350,584
Wire rods	9,396	11,802	98,493	13,872
Steel rails	66,900	35,586	373,091	289,004
Steel bars	36,271	63,587	316,267	421,637
Iron bars	9,731	5,002	58,815	35,951
Struc. iron and steel	34,225	18,680	183,707	170,907
Hoops, bands & scroll	7,004	4,515	38,443	40,798
Sheets & plates	67,769	51,642	609,340	527,603
Tin and terne plate	19,879	18,571	162,202	142,934
Barbed wire	6,360	6,282	163,677	118,688
All oth. wire	13,846	11,642	110,491	122,754
Cut nails	457	233	2,341	3,179
Wire nails	10,240	8,707	55,079	85,028
All other nails incl. tacks	2,037	748	10,966	9,859
Pipes and fit'gs	22,776	14,870	101,462	132,097
R. R. spikes	1,878	367	8,097	11,309
Bolts, nuts, rivets and washers	3,641	2,086	23,704	21,471
Horseshoes	176	189	1,127	7,639
Cast radiators	130	128	2,267	2,177
Total	344,180	432,465	3,376,007	3,839,403

IRON AND STEEL IMPORTS
(Gross Tons)

	February, 1919	February, 1918	Eight months ending February, 1919	Eight months ending February, 1918
Pig iron	3,110	3,435	18,036	38,066
Scrap	4,681	4,934	56,978	51,725
Bar iron	518	400	1,201	2,110
Ingots, blooms and billets	2,232	2,671	25,795	34,154
Struc. shapes	156	117	2,068	6,658
Rails	1,090	33	7,366	6,376
Sheets and plates	32	610	428	1,627
Tin and terne plate	.....	32	.....	32
Tin scrap	483	437	4,831	5,646
Wire rods	.....	271	1,929	1,435
Total	12,302	12,940	118,632	147,829

EXPORTS PIG IRON AND SEMI-FINISHED
(Gross Tons)

	Pig iron	Semi-finished material
1916—		
January	19,319	55,315
February	15,061	87,406
March	19,439	107,675
April	18,518	88,764
May	28,293	142,782
June	48,770	116,316
July	28,718	135,827
August	60,264	160,921
September	64,122	163,104
October	92,756	162,669
November	106,781	120,883
December	105,195	162,901
1917—		
January	69,146	183,656
February	49,018	131,566
March	69,629	193,469
April	44,783	162,209
May	61,112	168,158
June	83,406	190,907
July	32,305	106,085
August	62,083	170,503
September	44,287	148,932
October	47,115	209,667
November	25,733	150,120
December	67,593	203,085
1918—		
January	20,581	195,385
February	10,540	173,272
March	9,849	144,443
April	11,282	177,128
May	22,567	159,299
June	22,896	139,377
July	20,265	139,612
August	36,028	189,851
September	34,494	135,450
October	35,452	125,023
November	30,825	150,024
December	24,577	63,890
1919—		
January	36,757	11,594
February	20,840	10,407

To Export Iron and Steel

To conduct an export business in iron and steel, W. M. MacCleary & Co. recently have opened offices at 2 Rector street, New York. Maj. W. M. MacCleary, president, formerly was with Whitaker-Glessner Co. and more recently chief of raw material section, procurement division, ordnance department, Washington. Capt. George E. Morrissey, vice president, formerly was in the general export business in New York and during the war had charge of miscellaneous purchases, ordnance department, including machinery.

Most Corporation Returns Tentative

Final Forms for Income Tax, Unavailable Before March 15, Must be Completed Before May 1—Masterpiece from Accountant's Point of View but Difficult for Taxpayers—Specimen Return May Solve Problems

INCOME TAX DEPARTMENT
Conducted by
WOLFF, MILLER & CO.,
Certified Public Accountants
1328 Broadway, New York City

ADVICES from Washington are to the effect that practically all corporations throughout the country filed tentative income tax returns March 15, as form No. 1120 was not available in time for the preparation of the complete return. Consequently corporations in general have until May 1, 1919 to prepare and submit final returns on the latter form.

Due to many methods of calculating corporate taxes, the final return is complex and difficult to prepare. Having in mind the many diverse conditions to be provided for on a return of this kind, the efforts of the internal revenue service in devising form No. 1120 certainly merit praise.

From the accounting point of view, form No. 1120 is nothing short of a masterpiece, as it furnishes the government with sufficient information to enable it practically to make an audit from the blank proper, without having to have recourse to an examination of the books of account, in many cases. The reconciliation of net profit with taxable net income, covered by schedule B on the second page of the form reproduced herewith, by its particularization puts the inclusion of any improper item squarly up to the taxpayer. On the other hand, it plainly indicates what income is excluded from taxation and provides for its deduction.

The analysis of surplus account commencing with the first year of the prewar period, and for every year thereafter, ties together and shows at a glance the operation of the business for the past eight years. In addition there are no less than 15 schedules required from a corporation making full return. All this will require much of the taxpayer's time and attention, particularly in those cases where a prewar period has to be taken into account. The information as to capital and income of the prewar period need not be submitted except:

Where a corporation was not in existence during the prewar period and is not a successor to a business then existing.

Where the net income for the taxable year in excess of the $3000 specific exemption, is not greater than 10 per cent of the invested capital for the taxable year.

Where the net profits for the prewar period are less than 10 per cent of the invested capital for that period.

The accompanying reproductions of pages 1 and 2 of the corporation return, form No. 1120, cover the summary of the taxable net income and include the operations for calculating the tax. The figures used in this specimen return were taken from our second article, on corporation taxes. This article appeared in the Jan. 30 issue of THE IRON TRADE REVIEW.

The facts upon the basis of which the tax was computed in that article, as well as on the forms herewith, are as fol-

Invested capital, taxable year	$250,000
Net income taxable year	100,000
Average invested capital, pre-war period	125,000
Average net income pre-war period	40,000

The taxes as calculated in the second article and as shown by the form herewith amount to $47,488.

Questions and Answers

QUESTION: *We wish you would have your expert make the following points relative to income tax clear to us: In the case of a private individual whose salary is $5000 per annum and who also receives a cash dividend from a corporation amounting to $3000 and a stock dividend from a corporation amounting to $1000. The clear exemptions on the above amount to $2600 on account of party being head of a family with three children.*

Now in the above case what would be considered the net income for the purpose of deducting 15 per cent to cover donations to Red Cross and religious institutions? Also, what would be the net income on which the 6 per cent tax applies? Also, what would be the amount on which the normal tax of 12 per cent applies, and what would be the amount of surtax if any? Would the stock dividend on which there is no established market value be considered income?

ANSWER: You did not state from which year's earnings the stock dividend was declared. Such a dividend is taxable at the tax rates existing in the year earned. This answer assumes that the stock dividend was out of 1918 eanings. Cash dividends are all taxable at 1918 rates regardless of when earned. This would make the total income for 1918 $9000, which would be also the net income for the purpose of deducting 15 per cent to cover donations to the Red Cross and religious institutions. Assuming that you contributed 15 per cent of your income to organized charities, you could deduct $1350, leaving $7650 taxable income. Deduct from this $2600 exemption leaves $5050. Of this $4000 is taxable at 6 per cent, or a tax of $240 and the balance, $1050, at 12 per cent, or $126. Fifty dollars would be subject to surtax at 1 per cent, adding 50 cents to the previous amount. This would make your tax aggregate $366.50.

As to the stock dividend, the revenue act of 1918 makes a specific provision that "a dividend paid in stock of the corporation shall be considered income to the amount of the earnings or profits." Although the revenue law of this year and of the past years provides for taxation of dividends in stock, there have been court decisions holding that stock dividends do not constitute income and therefore are not taxable. One of these decisions was in the case of Towne vs. Eisner (245 U. S. 418, 38 Sup. Ct. 158). This decision was based on a contest of the 1913 revenue act. A more recent and similar decision was handed down in the United States circuit court by Judge Julius G. Mayer. It would appear, therefore, that it is more likely that the United States supreme court when it reviews the circuit court's decision on appeal, will hold that a stock dividend is not taxable. In the meantime, however, taxpayers are obliged to include in their returns stock dividends as income and pay taxes thereon. Many taxpayers who are doing this and at the same time filing protests. Should the United States supreme court hold as it is expected to, the government would then refund any extra taxes collected on account of stock dividends. In your case the refund would at 1918 rates amount to $120.50, making the net tax $246.

DELIVER OR SEND THIS RETURN TO COLLECTOR OF INTERNAL REVENUE ON OR BEFORE MARCH 15, 1919

IF EXTENSION OF TIME FOR FILING RETURN HAS BEEN GRANTED THE AUTHORIZATION MUST BE ATTACHED TO THIS RETURN

Page 1—Summary

Form 1120—UNITED STATES INTERNAL REVENUE SERVICE

CORPORATION INCOME AND PROFITS TAX RETURN

FOR CALENDAR YEAR 1918

OR

Fiscal Period begun _____, and ended _____, 1918

If the payment made on submission of Form 1031T was less than one-fourth of the tax (Item 29 or Item 35, Schedule IV) the balance of such one-fourth, with interest at the rate of 6 per cent per annum from March 15, 1919, must be remitted herewith.

(Print plainly corporation's name and principal place of business)

THE X. Y. Z. MFG CO.,

DETROIT,

MICH.

Examined by

Audited by

(DO NOT WRITE IN THIS SPACE)

PAYMENT

CASH $ _____

CHECK $ _____

M. O. $ _____

CERT. OF IND. $ _____

(Cashier's Stamp)

SCHEDULE I—NET INCOME.

Item.	1911	1912	1913	1918
1. Net Income for Each Prewar Year (as finally determined on income return)	$ 28 000	$ 36 000	$ 48 000	
2. Plus amount of corporation excise tax paid in each year	2 000	4 000	7 000	
3. Totals for 1911, 1912; and 1913	$ 30 000	$ 40 000	$ 55 000	
4. Less dividends received in 1913			5 000	
5. Net Total for 1913			$ 50 000	
6. Average Net Income for Prewar Period (sum of items on line 3 for 1911 and 1912 and Item 5 for 1913, divided by number of years)			$ 40 000	
7. Net Income for Taxable Year (Item 25, Schedule A, page 2)			$	100 000

SCHEDULE II—INVESTED CAPITAL.

Item	1911	1912	1913	Taxable Year.
1. Capital, surplus, and undivided profits at the close of the preceding year as shown by corporation's books before any adjustments are made therein (from Schedule E)	$ 110 000	$ 120 000	$ 155 000	$ 260 000
2. Plus adjustments by way of additions (from Schedule F)	5 000	10 000	10 000	---
3. Total	$ 115 000	$ 130 000	$ 165 000	$ 260 000
4. Less adjustments by way of deductions (from Schedule G)	10 000	15 000	---	10 000
5. Balance	$ 105 000	$ 115 000	$ 165 000	$ 250 000
6. Plus or minus changes in invested capital during year (from Schedules H and J)	---	+ 15 000	- 10 000	---
7. Total (or Balance)	$ 105 000	$ 130 000	$ 155 000	$ 250 000
8. Less deduction on account of inadmissible assets (from Schedule L)	5 000	5 000	5 000	---
9. Invested Capital for Each Year	$ 100 000	$ 125 000	$ 150 000	$ 250 000
10. Average Invested Capital for Prewar Period (sum of items on line 9 for 1911, 1912, and 1913 divided by number of years)				125 000
11. Increase or Decrease in Invested Capital for Taxable Year as Compared with Average Prewar Invested Capital (Indicate decrease by "D")				$ 125 000

SCHEDULE III—EXCESS-PROFITS AND WAR-PROFITS CREDITS.

(If this return is made for a period less than a full year, Items 3 and 8 must be reduced as provided in paragraph 1, page 1 of Instructions.)

Excess-Profits Credit.		War-Profits Credit.	
1. Eight per cent of invested capital for taxable year (Item 9, last column, Schedule II)	$ 20 000	4. Average net income for prewar period (Item 6, Schedule I)	$ 40 000
2. Exemption ($3,000)	3 000	5. Plus 10% of increase or minus 10% of decrease shown by Item 11, Schedule II	12 500
3. Excess-Profits Credit (Item 1 plus Item 2)	$ 23 000	6. (a) Total of (or Difference Between) Items 4 and 5, or (b) 10% of invested capital for taxable year (Item 9, last column, Schedule II), whichever is larger	$ 52 500
		7. Exemption ($3,000)	3 000
		8. War-Profits Credit (Item 6 plus Item 7)	$ 55 500

SCHEDULE IV—COMPUTATION OF TAXES.

WAR-PROFITS AND EXCESS-PROFITS TAX (Brackets one and two).

(If this return is for a period less than a full year the invested capital must be reduced as provided in paragraph 1, page 1 of Instructions.)

1. Brackets.	2. Amount of Net Income (Item 7, Schedule I) in Each Bracket.	3. Excess-Profits Credit (Item 3, Schedule III).	4. Balance Subject to Tax.	5. Rate.	6. Amount of Tax.
1. Not over 20% of invested capital	$ 50 000	$ 23 000	$ 27 000	30%	$ 8 100
2. Over 20% of invested capital	50 000	---	50 000	65%	32 500
3. Totals	$ 100 000	$ 23 000	$ 77 000		$ 40 600

WAR-PROFITS AND EXCESS-PROFITS TAX (Bracket three).

4. Net income for taxable year (Item 7, Schedule I)	$ 100 000	7. Eighty per cent of Item 6	$ 35 600
5. Less amount of war-profits credit (Item 8, Schedule III)	55 500	8. Less Item 3 column 6 (if smaller than Item 7)	40 600
6. Balance	$ 44 500	9. Tax in Bracket Three (Item 7 minus Item 8—if Item 8 is the larger, make no entry)	$
10. Total War-Profits and Excess-Profits Tax as Computed under Section 301 (a) (Item 3 column 6 plus Item 9)			$ 40 600
11. Total War-Profits and Excess-Profits Tax, if Computed under Section 302, 303, 304 (c) or 327 (see Instructions, page 1, paragraphs 6 and 7)			$

INCOME TAX.

12. Net income for taxable year (Item 7, Schedule I)	$ 100 000	17. Tax of 12% on Item 16	$ 6 888
13. Less: Interest on obligations of U. S. and exempt (Item 4, Schedule A, page 2) $			
14. War-profits and excess-profits tax (Item 10 or 11) 40 600		18. Item 10 or Item 11 plus Item 17	47 488
15. Exemption ($2,000 unless return is for less than a year) 2 000	42 600	19. Less income, war-profits, and excess-profits taxes paid or accrued to foreign countries on income arising from sources therein, and to possessions of the United States (see Sections 238 and 240 (c) of Revenue Act of 1918)	
16. Balance subject to income tax (Item 12 less Items 13, 14, and 15)	$ 57 400		
20. Total War-Profits, Excess-Profits, and Income Taxes (except in case of a fiscal year) (Item 18 minus Item 19)			$ 47 488

ADJUSTMENT OF TAX FOR FISCAL YEAR ENDED IN 1918.

21. That proportion of Item 20 which the number of months within the calendar year 1918 is of the number of months in the entire period	$	23. Total tax (Item 21 plus Item 22)	$
22. That proportion of a tax computed under the revenue acts of 1916 and 1917 which the number of months within the calendar year 1917 is of the number of months in the entire period	$	24. Less total tax already paid for the fiscal year ended in 1918	
		25. Balance of Tax	$

26. Tax paid: On submission of tentative return (1031 T), $ 10,000; by remittance accompanying this return, $ _____ Total $ 10 000

Page 2—Income Schedules

SCHEDULE A—TAXABLE NET INCOME.

NOTE.—Railroad corporations, banks, insurance companies, and other corporations required to submit statements of income and expenses to any national, State, municipal, or other public officer may submit instead of Schedule A a statement of income and expenses in the form in which submitted to such officer. In such cases the taxable net income will be reconciled by means of Schedule B with the net profit shown by the income and expense statement submitted, and should be entered as Item 7, Schedule I, page 1.

GROSS INCOME.			
1. Gross sales, less returns and allowances	$ 2 000 000		
2. Less cost of goods sold, exclusive of expenses, repairs, and other items called for separately below (from Schedule A2)	1 600 000	$ 400 000	
3. Gross income from operations other than trading or manufacturing, less allowances (from Schedule A3)		50 000	
4. Interest on obligations of the United States or its possessions not exempt (from Schedule A4)		5 000	
5. Interest from other sources (from Schedule A5)		3 000	
6. Rentals		10 000	
7. Royalties		7 500	
8. Share of net income earned since December 31, 1917, by personal service corporations (whether received or not)		2 500	
9. Dividends on stock of foreign corporations (from Schedule A9)		2 000	
10. Gross income from all other sources except dividends (not including any amount in respect of sales of capital assets or miscellaneous investments—see Item 23, below) (from Schedule A10)		20 000	
11. TOTAL OF ITEMS 1 TO 10			$ 500 000
DEDUCTIONS.			
12. Ordinary and necessary expenses (except amounts reported in Item 2 above or called for separately below, and not including cost or value of capital assets or miscellaneous investments sold during taxable year—see Item 23) (from Schedule A12)		$ 277 000	
13. Compensation of officers (including salaries, commissions, and other compensation in whatever form paid) (from Schedule A13)		75 000	
14. Repairs (including labor, supplies, overhead, and other items properly chargeable to repairs) (from Schedule A14)		10 000	
15. Interest (except on indebtedness incurred or continued to purchase or carry obligations or securities, other than obligations of the United States issued after September 24, 1917, the interest on which is wholly exempt from income tax)		10 000	
16. Taxes (except Federal income, war-profits, and excess-profits taxes, taxes which are a credit under Section 238, and taxes assessed against local benefits of a kind tending to increase the value of the property assessed)		10 000	
17. Debts ascertained to be worthless and charged off within the taxable year		8 000	
18. Exhaustion, wear and tear (including obsolescence) (from Schedule A18)		5 000	
19. Amortization of war facilities (from Schedule A19)		10 000	
20. Depletion (if depletion is claimed, Form A (revised) of Mines and Minerals Section should be obtained from the Collector, filled in, and filed)		---	
21. TOTAL OF ITEMS 12 TO 20			$ 405 000
22. DIFFERENCE BETWEEN ITEMS 11 AND 21			$ 95 000
23. Profit or loss on sales of capital assets and miscellaneous investments (from Schedule A23) (Profit)		$ 10 000	
24. Losses sustained during the taxable year from fire, storm, or other casualty, or from theft, not compensated for by insurance or otherwise (from Schedule A24) (extend in last column net total of Items 23 and 24)		5 000	$ 5 000
25. NET INCOME FOR TAXABLE YEAR (total of or difference between Item 22 and Item 24, last column) (to be entered as Item 7, Schedule I, page 1)			$ 100 000

SCHEDULE B—RECONCILIATION OF NET PROFIT PER BOOKS WITH TAXABLE NET INCOME.

1. Net profit for year per books, before any adjustments are made therein	$ 70 000		5. Nontaxable income:	
2. Unallowable deductions:			(a) Interest on obligations of the United States and its possessions, wholly exempt	$ 500
(a) Donations, gratuities, and contributions	5 000		(b) Interest on obligations of States, Territories, and political subdivisions thereof	500
(b) Income, war-profits, and excess-profits taxes paid or accrued to the United States, its possessions, or a foreign country	20 000		(c) Interest on Farm Loan Bonds issued under Federal Farm Loan Act	1 000
(c) Special improvement taxes	1 000		(d) Dividends on stock of domestic corporations	2 000
(d) Furniture and fixtures, additions, or betterments treated as expenses on the books	1 000		(e) Dividends on stock of personal service corporations declared out of profits earned prior to January 1, 1918	5 000
(e) Replacements covered by depreciation	2 000		(f) Other items of nontaxable income (to be detailed)	
(f) Insurance premiums paid on the life of any officer or employee for the benefit of the corporation or business	3 000		(g)	
(g) Interest on indebtedness incurred or continued to purchase or carry obligations or securities (other than obligations of the United States issued after September 24, 1917) the interest upon which is wholly exempt from income tax			(h)	
(h) Additions to reserves for bad debts, contingencies, etc. (to be detailed)			(i)	
(i) Bad Debts Reserve	5 000		6. Charges against reserves for bad debts, contingencies, etc. (to be detailed)	
(j)			(a) Bad debts	1 000
(k)			(b)	
(l)			(c)	
(m) Other unallowable deductions (to be detailed)			(d)	
(n)			7. Amount necessary to adjust book profit or loss with the amounts reported in Items 22 and 24, Schedule A (unless entry belongs on line 8)	
(o)			8. Taxable net income (Item 25, Schedule A)	100 000
3. Amount necessary to adjust book profit or loss with the amounts reported in Items 22 and 24, Schedule A (unless entry belongs on line 7)	3 000			
4. TOTAL	$ 110 000		9. TOTAL	$ 110 000

SCHEDULE C—BALANCE SHEETS.

Attach hereto balance sheets as of the beginning and end of the taxable year (preferably in parallel columns), showing as nearly as practicable the details called for below:

ASSETS.

Cash (including cash in bank and on hand, certificates of deposit, etc.).
Trade accounts and notes receivable (before deducting reserves for losses).
Other accounts and notes receivable (to be classified).
Inventories:
- Raw materials.
- Work in progress.
- Finished products.
- Supplies.

Investments:
- U. S. bonds and obligations (each issue to be stated separately).
- Stock of corporations—
  - Foreign.
  - Domestic.
- Bonds—
  - Exempt (municipal, State, etc.).
  - Other.

Loans and advances:
- To officers and employees.
- To others.

ASSETS (Continued).

Deferred charges to future operations.
Fixed assets:
- Land.
- Buildings.
- Machinery.
- Tools and minor equipment.
- Delivery equipment.
- Office furniture.
- Other (state character).

TOTAL.
Less reserve for depreciation.
NET VALUE.
Patents, good will, and other intangible assets:
- Paid for in cash or other tangible property.
- Paid for in stock (other than stock dividends).
- Created by stock dividend or otherwise.

Discount:
- On bonds.
- On stock.

TOTAL.

LIABILITIES.

Notes payable:
- To officers and stockholders.
- To others (including bank loans).

Accounts payable:
- Trade.
- Other.

Accrued expenses and reserves, the charges creating which are allowable deductions from income (to be detailed).
Reserve for losses on notes and accounts receivable.
Reserves for contingencies, etc., the charges creating which are not allowable deductions from income (to be detailed).
Capital stock outstanding (to be classified).
Surplus and undivided profits.
TOTAL.

A corporation having a net income of $3,000 or more, which was in existence during at least one full prewar year, should also attach to this return similar balance sheets (preferably in parallel columns) as of the beginning of its first full prewar year and as of December 31, 1913.

SCHEDULE D—ANALYSIS OF SURPLUS ACCOUNT.

Attach hereto an analysis of the corporation's surplus account, showing the details of all adjustments of surplus for the taxable year, as nearly as practicable in the following form:

1. Surplus at beginning of year per books.
Add: 2. Total net profit per books and per Schedule B (Item 1).
3. Other credits to surplus (to be detailed).
4. Total of Items 1, 2, and 3.
Deduct: 5. Dividends (state date payable and amount of each, and whether in cash or in stock).
6. Other debits to surplus (to be detailed).
7. Surplus at end of year per books.

A corporation having a net income of $3,000 or more, which was in existence during at least one full prewar year, should also attach to this return a similar analysis of its surplus account for its first full prewar year and for each subsequent year down to the beginning of the taxable year.

9—4000

Steel Corporation Income Is Huge

Gross Receipts Total $1,744,312,612 but Net Earnings Fall $100,000,000, Due to War Taxes and Higher Manufacturing Costs—Wage Charge Heavily Increased —Works Output Below 1917—War Record is Summarized

SHOWING by considerable margin, the highest price per ton of products shipped in its history, the United States Steel corporation in 1918 still was unable to show net earnings, by approximately $100,000,000, of the amount realized in 1917. This shrinkage in net earnings, it is set forth in the annual report of the Steel corporation just made public, was due to the tremendous allowance for federal income and war excess profits taxes, amounting to $274,277,835.

Statistics of Steel Corporation Since Founding

Year	Gross receipts	Net earnings	Balance capital expend.tures	Production steel ingots, gross tons	Production finished steel for sale, net tons	Shipments finished products, net tons	Number of employes
1918	$1,744,312,163	$482,558,939*	$129,855,037	19,583,493	13,849,483	14,124,986	268,710
1917	1,683,962,552	528,757,614*	117,977,117	20,285,061	14,942,911	15,370,105	268,058
1916	1,231,473,779	333,574,177	64,680,648	20,910,589	15,460,792	15,542,088	252,668
1915	726,683,589	130,396,011	15,337,431	16,376,492	11,762,639	10,982,748	191,126
1914	558,414,933	71,663,615	23,171,013	11,826,476	9,014,512	9,078,559	179,353
1913	796,894,299	137,121,844	41,999,098	16,656,361	12,374,838	12,168,758	228,906
1912	745,505,515	108,174,673	13,780,361	16,901,223	12,506,619	12,696,935	221,025
1911	615,148,839	104,305,466	49,430,861	12,753,370	9,476,248	9,460,169	196,888
1910	703,961,424	101,054,754	53,101,221	14,179,369	10,733,995	10,727,751	218,435
1909	646,382,251	131,491,414	37,916,250	13,355,189	9,859,660	9,691,290	195,500
1908	482,367,840	91,847,710	49,422,697	7,838,713	6,206,932	7,102,456	165,211
1907	757,014,767	160,964,073	66,981,252	13,099,548	10,376,742	10,451,488	210,180
1906	696,756,926	156,624,273	32,155,146	13,511,149	10,578,433	10,862,425	202,457
1905	535,331,736	110,787,653	24,395,408	11,995,239	9,226,386	.....	180,158
1904	444,405,430	73,176,522	17,957,946	8,406,378	6,792,780	.....	147,343
1903	536,572,871	100,171,152	31,042,135	9,167,960	7,635,690	.....	167,709
1902	560,510,479	133,303,763	16,586,531	9,743,918	8,197,232	.....	168,127
1901	.....	84,779,293	.....	8,854,820	.....	.....	.....

*Before federal taxes.

The gross receipts for the year were $1,744,312,163 of which $1,288,029,255 represented shipments of iron and steel products, by-products, Portland cement, etc.; and $406,283,908 from other sources and the total earnings before taxes and subsidiary dividend interest were $482,558,939. This compares with $1,683,962,562 and $528,757,614 in 1917; and $1,231,473,779 and $333,574,177 respectively in 1916. Steel production of the Steel corporation in 1918 fell below both 1917 and 1916. Ingot output in 1918 was 19,583,493 tons and the production of finished steel for sale was 13,849,483 tons. In 1917 the production figures were 20,285,061 tons and 14,942,911 tons respectively; in 1916, 20,910,589 tons and 15,460,792 tons.

The outlay in the year for capital expenditures was unusually heavy, this being due both to the high cost of construction and the imperative war demands for increased output. At the close of the year there was unexpended against authorized appropriations for new additions and betterments, including iron ore, stripping for 1918 the sum of $115,000,000. It is expected the greater part of this will be expended during 1919. The items of ordinary repairs and maintenance, and for extraordinary replacements, etc., also was unusually heavy, amounting to $101,274,827 against $78,101,777 in 1917.

The shipments of all classes of production during 1918 for both domestic and export consumption, compared with the preceding year is as follows:

Domestic	1918, tons	1917, tons
Rolled steel and other finished products	12,384,169	13,196,910
Pig iron, ingots, spiegel, ferro and scrap	307,482	534,768
Iron ore, coal and coke	1,009,919	999,590
Sundry mate. and by-prod.	192,925	139,998
Total tons all kinds of mate., except cement	13,894,495	14,871,266
Univ. portland cement (bbls.)	7,707,595	10,398,759
Export	**1918, tons**	**1917, tons**
Rolled steel and other finished products	1,740,817	2,173,195
Pig iron, ingots and scrap	17,120	19,479
Sund. mate. and by-products	2,305	1,911
Total tons all kinds of materials	1,760,242	2,194,585
Aggregate tonnage of rolled steel and other finished products shipped to both domestic and export trade	14,124,986	15,370,105

Gross Receipts Were Greatest

Perhaps in no department of the corporation's record is its magnificent growth of recent years more impressively exhibited than in the showing of its finances. Its gross receipts in 1918 amounting to $1,744,312,162 were millions in excess of the total prewar revenue of any single government in the world. In 1917 the gross was $1,683,062,552 while in 1914 it was only $588,414,933. In this amazing increase over the prewar total the vastly expanded volume of output is reflected, as well as higher prices.

With net earnings after all charges, including taxes, but before dividends, of $137,532,377 as compared with $244,219,564 in the previous year, the company is shown to have been adversely affected as to its earnings by the various difficulties of operation during 1918, the heavy tax burden and the curtailment of production subsequent to the signing of the armistice on Nov. 11. The two final quarters of the year were more severely hit in earnings. The second quarter was the peak period with a balance available for dividends of $46,925,149 compared with $42,940,276 in the first quarter; $26,665,310 in the third; and $20,372,186 in the final three months.

The final surplus of the year was $28,935,350 as compared with $52,505,437 in 1917. The balance available for common dividends after deducting $12,215,000 additional allowance for amortization of war plants was $100,087,700. This is equivalent to 19.69 per cent a share on the $508,583,000 outstanding common stock, against 39.15 per cent in 1917; 48.4 per cent in 1916, and 9.3 per cent in 1915. In 1914 the income account disclosed a deficit after all charges.

The colossal financial strength of the corporation is revealed in the record of working capital and undivided surplus. With current assets of $883,136,081 and current liabilities of $397,781,482 a net working capital as of Dec. 31 of $485,354,599 is shown. This represents a gain over the working capital as of Dec. 31, 1914, of $258,635,814, and is an index of the tremendous expansion of the corporation's business, its enlarged payrolls, its greater inventories and its rapidly growing demands for ready and liquid assets reaching a stupendous aggregate.

Many interesting facts are contained in the balance sheet. Inventories, for instance, stood on Dec. 31, at $274,753,600 a gain of $46,819,096 during the year. At the close of 1914 inventories totaled $158,091,036.

Accounts and bills receivable amounting to $116,855,755 show an increase of $29,905,793. A new account

PRODUCTION
OF
RAW, SEMI-FINISHED AND FINISHED PRODUCTS BY SUBSIDIARY COMPANIES IN THE YEAR 1918 COMPARED WITH THE YEAR 1917

PRODUCTS	1918	1917
IRON ORE MINED		
In the Lake Superior Region	*Tons*	*Tons*
Missabe Range	21 574 526	23 806 268
Vermilion Range	808 994	1 039 807
Gogebic Range	1 916 220	2 197 554
Menominee Range	1 172 319	1 120 382
Marquette Range	338 344	491 760
In the Southern Region		
Tennessee Coal, Iron & R. R. Co.'s Mines	2 522 536	3 125 998
Total	28 332 939	31 781 769
LIMESTONE QUARRIED	5 141 365	6 494 917
COAL MINED		
For use in the manufacture of coke	25 393 155	24 554 525
For steam, gas and all other purposes	6 354 980	6 942 298
Total	31 748 135	31 496 823
COKE MANUFACTURED		
In Bee-Hive Ovens	9 962 403	11 177 247
In By-Product Ovens	7 795 233	6 284 428
Total	17 757 636	17 461 675
BLAST FURNACE PRODUCTION		
Pig Iron	15 700 561	15 460 638
Spiegel, Ferromanganese and Ferrosilicon	240 393	192 290
Total	15 940 954	15 652 928
STEEL INGOT PRODUCTION		
Bessemer Ingots	5 630 246	6 405 390
Open Hearth Ingots	13 953 247	13 879 671
Total	19 583 493	20 285 061
ROLLED AND OTHER FINISHED STEEL PRODUCTS FOR SALE		
Steel Rails (Heavy and Light Tee and Girder)	1 471 508	1 594 196
Blooms, Billets, Slabs, Sheet and Tinplate Bars	1 489 737	1 692 348
Plates	2 171 362	1 473 625
Heavy Structural Shapes	1 079 601	1 004 537
Merchant Bars, Hoops, Skelp, Light Shapes, Etc	2 159 279	2 650 970
Tubing and Pipe	1 190 594	1 234 129
Wire Rods	209 350	267 071
Wire and Wire Products	1 445 567	1 821 985
Sheets (Black and Galvanized) and Tinplates	1 356 119	1 740 949
Finished Structural Work	503 380	550 744
Angle Splice Bars and All Other Rail Joints	145 305	207 846
Spikes, Bolts, Nuts and Rivets	67 514	91 980
Axles	141 480	220 291
Steel Car Wheels	84 331	110 014
Sundry Steel and Iron Products	334 356	282 226
Total	13 849 483	14 942 911
Spelter	41 715	67 418
Sulphate of Iron	42 321	43 942
Fertilizer—"Duplex Basic Phosphate"	12 022	11 574
	Bbls.	*Bbls.*
Universal Portland Cement	7 287 000	10 917 000

is included entitled, "due from United States railroad administration," and it stands at $19,647,695. Most remarkable of all the items, however, are those showing "marketable securities," including Liberty bonds and certificates of indebtedness, of $277,745,969 and cash in the bank, subject to check, of $173,806,259. These items are the purest type of liquid assets, the securities being readily convertible into cash, and are but illustrative of the supremely sound position of the corporation. Included in the current liabilities is an item of $288,078,865 of accrued taxes, not yet due, as of Dec. 31.

The total undivided surplus of the corporation at the close of the year was $466,888,481, inclusive of the $25,000,000 working capital provided at the time of organization in 1901. This represents a gain over the 1914 undivided surplus, of $331,683,950. The force of this is emphasized when it is seen that the gain in surplus in the four years was equal to $65.25 a common share. The total undivided surplus acquired by the company since its organization and not including the original $25,000,000 is $441,888,421 and is equal to $86.93 a common share.

During the year the bonded debt of the corporation was reduced by $4,007,906 to $582,820,969. In the years from 1901 to the close of 1918 the bonded indebtedness has been reduced $172,182,658. The total property investment account of the corporation stands at $1,871,261,897 as compared with $1,773,568,415. The net addition to the property account, after providing for amortization of a proportion of the cost of facilities installed for production of articles contributing to the prosecution of the war, was $77,640,037. This item includes $4,719,021 expended for houses for employes and development of property for the benefit thereof.

The report shows that $96,675,859 was expended for ordinary maintenance and repairs, an increase of 34 per cent over the preceding year. Extraordinary replacements cost $4,598,968 a gain of 22 per cent. A total of $140,671,214 was charged off for exhaustion of minerals, deterioration and obsolesence, against $136,057,604 in 1917.

Referring to the stock distribution plan to employes the report says that in January the privilege of subscribing to common stock at $92 a share was offered employes and that at the date of writing the report subscriptions from 60,741 employes had been received for an aggregate of 156,680 shares, an increase of 40.4 per cent in the number of subscribing employes and of 64.2 per cent in the number of shares, as compared with the 1918 records.

The company made the usual distribution of special compensation to employes during the year under the plan adopted in 1903. The sum of $1,110,064 was expended for safety work during the year and $3,336,459 was disbursed in connection with work accidents.

War Record is Shown

An interesting new feature of the report this year is a complete summary of the war service performed by the Steel corporation. A table of shipments of steel and other products furnished by the corporation for war purposes is presented. The record for steel including tonnage which from available records it is known was applied for war purposes is as follows:

	From Aug. 1, 1914 to Apr. 1, 1917	From Apr. 1, 1917 to Dec. 31, 1918	Total Aug. 1, 1914 to Dec. 31, 1918
U. S. govt. and oth. customers in U. S.	1,434,530	7,669,910	9,104,440
Allies (exported)	4,623,110	2,669,840	7,292,950
U. S. R. R. adm., during 1918 only	.....	2,042,070	2,042,070
Total	6,057,640	12,381,820	18,439,460

Shipments of products other than steel, the totals are as follows:

Toluol and benzol products, gallons	11,802,651	16,067,310	27,869,961
Ammonium sulphate and liquor, lbs.	234,016	21,095,638	21,329,654
Spelter, tons	26,890	13,517	40,407
Cement, barrels	46,725	556,742	603,467

The report shows that during the period of the war the various subsidiary companies of the Steel corporation shipped a total of 1,733,618 gross tons of projectile steel to the United States and its allies. The shipments of shell forgings aggregated 703,827 gross tons, and of armor plate

and armor plate products, 69,795 gross tons.

The expenditure for safety work was $1,110,064, and for accident relief $3,336,459.

In order to increase the productive capacity of the various properties to meet the war demands both as to volume of tonnage, modified forms of steel or for various by-products, there was appropriated and expended since August, 1914, for extensions and betterments, the sum of $302,776,000. Of this amount $100,114,294 was expended from Aug. 1, 1914 to April 1, 1917, and it is estimated the excess cost over the estimated prewar cost in this outlay was $16,507,190. From April 1, 1917, to Dec. 31, 1918, the expenditures were $202,661,905 and the estimated excess cost over the prewar basis, $86,793,681.

The subscriptions of the Steel corporation and subsidiary companies to the various Liberty bond loans, aggregated $127,950,900. After deducting bonds delivered to or held for employes, the amount remaining in the corporation treasury on Dec. 31, was $97,134,900. Prior to the entrance of the United States into the war, the corporation purchased an aggregate of $84,683,000 of various loans issued by the allies and since April, 1917, there was purchased an additional $15,117,400, netting a grand total of $99,800,400.

Large increase in wage rates during the period of the war is set forth by a striking exhibit. During the period of the war, eight general increases in wage rates, amounting in all to 131 per cent were granted. Of these, three came within the year of 1918. The increase of Oct. 1, 1918, is due to the establishment of the basic 8-hour day and the payment of increased rates for overtime. The general average earnings per employe per day in December, 1918, excepting administrative and selling forces, was $6.23 per day compared with $2.88 in 1914, an increase of 116 per cent; of all employes including the administrative and selling forces, $6.26 per day compared with $2.97 in 1914, an increase of 111 per cent.

The average number of employes in each of the past five years and the total payroll were as follows:

	Average number employes	Total pay roll	Average annual earn'gs per employe
1914.....	179,353	$162,379,907	$905
1915.....	191,126	176,800,864	925
1916.....	252,688	263,385,502	1042
1917.....	268,058	347,370,400	1296
1918.....	268,710	452,663,524	1685
In month of Dec., 1918	.....	.....	1950

COMPARATIVE INCOME ACCOUNT

For the Fiscal Years ending December 31, 1918 and 1917

	1918	1917	+Increase —Decrease
EARNINGS—Before charging interest on Bonds and Mortgages of Subsidiary Companies:			
First Quarter	$59 138 031 37	$78 994 371 04	— $19 856 339 67
Second Quarter	64 821 521 22	90 592 701 88	— 25 771 180 66
Third Quarter	45 211 706 47	73 007 297 57	— 27 795 589 10
Fourth Quarter	39 109 843 17	61 567 101 04	— 22 457 257 87
Total for year	*$208 281 104 23	*$304 161 471 53	— $95 880 367 30
Less, Interest on outstanding Bonds and Mortgages of the Subsidiary Companies	8 930 424 33	8 869 291 50	+ 61 132 83
Balance of Earnings	$199 350 679 90	$295 292 180 03	— $95 941 500 13
Less, Charges and Allowances for Depreciation applied as follows, viz.:			
To Depreciation and Extraordinary Replacement Funds and Sinking Funds on Bonds of Subsidiary Companies	33 117 398 16	43 296 038 26	— 10 178 640 10
To Sinking Funds on U. S. Steel Corporation Bonds	7 601 425 54	7 257 233 41	+ 344 192 13
Net Income in the year	$158 631 856 20	$244 738 908 36	— $86 107 052 16
Deduct:			
Interest on U. S. Steel Corporation Bonds outstanding	20 891 116 24	21 256 303 17	— 365 186 93
Premium paid on Bonds redeemed, viz.:			
On Subsidiary Companies' Bonds	70 135 35	117 914 50	— 47 779 15
On U. S. Steel Corporation Bonds	767 681 25	745 933 69	+ 21 747 56
Balance	$136 902 923 36	$222 618 757 00	— $85 715 833 64
Add: Net Balance of sundry charges and credits, including adjustments of various accounts	629 453 96	1 600 807 54	— 971 353 58
	$137 532 377 32	$224 219 564 54	— $86 687 187 22
Dividends on U. S. Steel Corporation Stocks, viz.:			
Preferred, 7%	25 219 677 00	25 219 677 00	.....
Common, {1918, Regular 5%, Extra 9% / 1917, Regular 5%, Extra 13%}	71 162 350 00	91 494 450 00	— 20 332 100 00
	$41 150 350 32	$107 505 437 54	— $66 355 087 22
Less, Deductions as follows:			
Additional allowance to cover amortization of part cost of facilities installed for production of articles contributing to prosecution of the war	12 215 000 00	.....	+ 12 215 000 00
Appropriated on account of expenditures for additional property, new plants and construction	.....	55 000 000 00	— 55 000 000 00
Balance carried to Undivided Surplus	$28 935 350 32	$52 505 437 54	— $23 570 087 22

*Balance of Earnings after making allowances for estimated amount of Federal income and war excess profits taxes.

Midvale Heads Predict Healthy Business

LOWER prices, not as low as the prewar level, an absence of anything in the nature of an industrial boom while business is compelled to carry the burden of the excess profits tax, but still a healthy trade movement stimulated by the everyday needs of the American people supplemented by such export trade as can be obtained, is pictured as the immediate business future of the country by Chairman W. E. Corey and President A. C. Dinkey, of the Midvale Steel & Ordnance Co., in the annual report just put out.

The report presents another outline of fine achievement in the production of material vital to allied victory. For the year ending Dec. 31, 1918, the company's net earnings were $50,529,012 as compared with $69,838,254 in the previous year and $36,718,819 in 1916. The balance after taxes and all charges was $29,208,537 against $35,576,560 in 1917. The comparative income account follows:

	1918	1917
Net earnings	$50,529,012	$69,838,254
Other income	1,507,926	1,567,522
Total	52,036,938	71,405,776
Amortization	5,193,563	.....
Int. and guaranteed divs.	3,219,061	3,270,885
Balance	43,624,314	68,134,891
Total	43,624,314	68,134,891
Taxes	.....	25,731,910
Reserve for inventory depre.	4,500,000	.....
Depletion of minerals	9,915,777	6,826,421
Balance	29,208,537	35,576,560
Dividends	12,000,000	12,000,000
Surplus	17,208,537	23,576,560
Previous surplus	41,461,561	18,656,610
Adjustment	.....	131,826
Total surplus	58,670,098	42,364,996
Special depreciation	4,950,000	.....
Appropriated surplus	.....	903,435
Surplus	53,720,098	41,461,561

The most interesting feature of the report is the record of wages, pro-

duction and number of employes covering three years of 1916, 1917 and 1918. This record shows a remarkable growth in total wages paid which was unaccompanied by a corresponding increase in production. Of great interest just now, when the discussion of wage costs in steelmaking is occupying much attention, is increase in wage cost per ton of steel product shipped, $18.95 in 1916 to $39.44 in 1918. The following table shows the number of men employed and the expenditures for labor, the Eddystone Rifle plant not included:

	1916	1917	1918
Total pay roll..	$31,521,531	$47,555,197	$59,304,724
Av. No. of empl.	31,048	38,375	34,434
Av. wages per man per year.	$1,015	$1,307	$1,722
Gross tons steel prod. shipped.	1,558,108	1,614,373	1,448,374
*Wages per ton of steel product shipped	$18.95	$27.95	$39.44

*Total pay roll, less portion expended on construction and improvements, divided by tons of steel product shipped.

The report shows that $19,752,850 was invested in Liberty bonds, $13,044,550 by the company and $6,708,300 by the employes. The report shows that the total weight of all gun forgings shipped during the war for the United States was 27,000,000 pounds which was increased by 6,500,000 pounds produced for the allies. The total number of guns for which major forgings were supplied was 6814, which compares with a total of 18,000 guns of all calibers had by the Germans on all fronts on July 15, 1918. During the period of the war the Eddystone plant supplied 1,299,261 British Lee-Enfield rifles to the government.

"It is not reasonable to expect that the level of commodity prices in effect at the close of hostilities can be maintained during peace conditions," says the statement of Messrs. Corey and Dinkey. "On the other hand we should not expect a return to prewar levels, either in commodity prices or wage rates. As long as business is compelled to carry the burden of the excess profits tax we cannot expect any material expansion in the nature of new enterprises. Men will not incur the great risks of such undertakings, unless gains commensurate with the risks involved are also possible. We look forward to 1919 hopefully, believing that when business has been fully released from the unusual restraints imposed upon it by war conditions, the combined common sense of employers and workmen will promptly adjust our industries to a basis which will be in harmony with economic laws, and on which we can reasonably expect a fair volume of trade.'

The principal expenditures during the year were the new rolled steel wheel plant, the 134-inch plate mill, the 90 by-product coke ovens, together with by-product recovery plant, all at Johnstown. The report refers to the plan of representation of employes, which affords a practical means of communication and conference with the employes collectively, on all matters pertaining to the relations between them and the company. The plan became operative Oct. 1, 1918.

"We believe," says the report, "that this fuller recognition of the dignity of labor is one of the most important advances made in recent years in the attempt to solve the vexed question of relations between employers and employes and we confidently expect it will serve to promote the mutual understanding which is so vital to the success of any large enterprise."

City of Origin

Will Entertain Foundrymen's Association—Philadelphia Gets Meeting

The twenty-fourth annual convention and the fourteenth exhibition of the American Foundrymen's association will be held at Philadelphia during the week of Sept. 29. This will be the third visit of this organization to Philadelphia where it was formed in June, 1896. Another meeting was held in that city in 1907. The convention and exhibition will be made international in scope and invitations will be extended to foundrymen and industrial engineers in England, France, Belgium, Italy and other European countries. The rehabilitation of the iron and steel industries of France and Belgium undoubtedly will involve the installation of a large amount of American equipment and this exhibition will afford manufacturers in these countries an opportunity to inspect at one time the latest and most improved devices for foundries and machine shops.

The exhibition will be held in the Philadelphia Commercial Museum, located along the Schuylkill river in West Philadelphia. The exhibition hall of the Commercial Museum is one of the largest buildings of this kind in the country. It has 88,000 square feet of exhibition space on one floor, and is so constructed that a large amount of operating machinery may be installed.

Philadelphia is one of the leading foundry centers of the United States and contiguous to it is the large steel casting producing district of which Chester is the center.

Welding Society

Formally Organized at New York —Bureau of Welding Created

The American Welding society was organized on a permanent basis at a meeting in the Engineering Societies building, New York, March 28. It is expected that the charter membership will be considerably in excess of 150. By resolution it was decided that all who join the society by April 7, will be considered as charter members. Comfort A. Adams, who was in charge of the work of the welding committee of the Emergency Fleet corporation, was elected president of the American Welding society. J. M. Moorehead was elected vice president for a term of one year, and G. L. Brunner was elected vice president for two years. The following were elected directors for one year: W. M. Beard, M. H. Roberts, M. M. Smith, L. D. Lovekin, Alexander Churchward, W. H. Patterson, W. J. Jones and C. A. McCune. The following were elected directors for a period of two years: R. R. Browning, A. S. Kinsey, Victor Mauck, E. L. Hirt, J. F. Lincoln, H. M. Hobart, D. C. Alexander and H. R. Swartley Jr. The following were elected directors for a period of three years: L. D. Davis, E. L. Mills, D. B. Rushmore, James Burke, D. H. Wilson Jr., Hermann Lemp, C. J. Nyquist and Alexander Jenkins.

The scope of the new society embraces welding of all kinds. Committees will be appointed to assume charge of the investigations and discussions relating to forge welding, electric resistance welding, electric arc welding, gas welding, thermit welding, etc. The work of these committees will come within the scope of the National Research council. One of the principal activities of the new society will be its sponsorship of the American bureau of welding, provided for in the constitution of the American Welding society. The American bureau of welding has been organized by the directors of the American welding society and a committee has been appointed to formulate by-laws for the bureau of welding. These will be reported at a formal meeting of organization to be held in the second or third week in April. The American bureau of welding is to be comprised of the directors of the American welding society, together with representatives of other societies, associations, and government departments, designated by the directors of the welding society.

Howard C. Forbes was appointed secretary of the American Welding society, and W. E. Symons, treasurer.

Obituaries

FERDINAND A. W. KIECKHEFER, aged 67, president of the National Enameling & Stamping Co., Milwaukee and New York, died March 27, at his home on Riverside drive and 113th street, New York City, following a stroke of apoplexy. He was born in Milwaukee in 1852 and resided there until four years ago. Mr. Kieckhefer engaged in the retail hardware business when a young man, and was highly successful from the start. Later, he undertook the manufacture of sheet metal goods on a large scale, and in 1899 his company, with four other interests, was merged into the National Enameling & Stamping Co. Mr. Kieckhefer became president of the latter company about 10 years ago, during which period he made his headquarters in New York. He was a member of the Union league, Sleepy Hollow, Country and other clubs.

Ezra L. Chapman, for over 30 years yard foreman for the Waterbury Brass Co., Waterbury, Conn., died in that city, March 21.

John F. Koch, treasurer of the Evinrude Motor Co., Milwaukee, died in California on March 20 after an illness of several months. He was 45 years of age.

Isaac J. Streng, 29, secretary of the M. Streng's Sons Co., dealers in waste materials, an officer in the National Association of Waste Material Dealers, died at his home in Pittsburgh, March 24.

Daniel J. Driscoll, president of the Delaware Seamless Tube Co., Auburn, Pa., died at his home in Reading, Pa., March 28. He was 56 years old and only recently resumed his duties after an illness of more than six weeks.

William A. Kenney, superintendent of the Reed Foundry Co. department of the Reed-Prentice Co., Worcester, Mass., died at his home in that city, March 23, from influenza, aged 60 years. He was a member of the New England Foundrymen's association.

Richard A. Hogges, purchasing agent of the Steel Co. of Canada, Ltd., died at Montreal, March 24, of pneumonia, aged 33. He was born in Scotland and located in Canada in 1910, entering the employ of the Steel Co. shortly afterwards.

Carl A. Strom, manager of the Cooke plant of the American Locomotive Co., in Paterson, N. J., died March 26, at the Lenox hospital, in New York. Mr. Strom was born in Sweden, 51 years ago and was a graduate of the Institute of Technology at Stockholm.

Samuel T. Fulton, vice president of the Railway Steel Spring Co., 30 Church street, New York, died March 28, at his home in that city, aged 53. In 1910 he became the Chicago representative of the Railway Steel Spring Co., coming to New York two years later as general sales agent, of that company.

John Heaphy, for more than 22 years superintendent of the foundries of the Rhode Island Locomotive Works and the American Locomotive Co., both of Providence, R. I., died in Pittsburgh, March 15. When the Providence business was given up he was transferred to the Pittsburgh plant and then to the Montreal branch plant. Still later he was again transferred to Pittsburgh.

Leander A. Bevin, honorary president of the Associated Veterans of the DeLamater Iron Works, died March 24 at Atlantic City, N. J., aged 74. He formerly was vice president of the Rider Ericsson Engine Co., New York, and was associated for many years with the DeLamater Iron Works, also of that city, at whose plant John Ericsson, the inventor, built the MONITOR.

Thomas R. Murray, general foreman of the blast furnace department of the Edgar Thomson works of the Carnegie Steel Co., died at his home in Braddock, Pa., March 23, after a brief illness. He entered the employ of the company 28 years ago, while still a boy, and rose to the position he held at the time of his death. He was a member of the Edgar Thomson Veterans' association.

James W. Sweeney, one of the best known steamboat builders on the Ohio river, died at Jeffersonville, Ind., March 22. He was 74 years of age. For many years he had been associated with his brother, M. A. Sweeney in the M. A. Sweeney Shipyards & Foundry Co. Thirty-five years ago he built the first steel-hull vessel on the Ohio river, the GOLDEN ROD, which is still in active service.

Herbert L. Blankenburg, who was Milwaukee manager of the General Combustion Co., Chicago, died of pneumonia at his home in the former city, March 18. Mr. Blankenburg was a native of Milwaukee, having been born there in 1884. He was graduated from the University of Wisconsin, and for a number of years prior to his association with the General Combustion Co., was connected with the General Electric Co.

W. A. Kemp, aged 56, vice president of the Sheet Metal Products Co., Ltd., Toronto, Ont., and president of the Macdonald Mfg. Co., Toronto, died recently at Summerville, S. C., where he had gone to recuperate. He located in Toronto to engage in business with his brother, now Sir Edward Kemp. For the last few years he has had the chief responsibility in conducting the company's affairs, Sir Edward Kemp having accepted a position with the Canadian government.

Henry A. Harkins, veteran contractor and structural steel man, a friend and former employe of Andrew Carnegie, died at his home in Etna, Pa., March 22. He was born in Altoona, Pa., Aug. 2, 1839, and came to Pittsburgh about 40 years ago. He was the constructing engineer of the Spang-Chalfont steel plant at Etna, Pa., and at one time general manager of the old Carnegie-Bitner Contracting Co. Mr. Harkins was a Civil war veteran.

Samuel B. Dusenberre, western sales manager of the New Departure Mfg. Co., New Britain, Conn., died at his home in Detroit, March 26, of pneumonia. For the last eight years Mr. Dusenberre had been in charge of the western territory of the company and was formerly general manager of the Westinghouse Storage Battery Co., and purchasing agent of the Westinghouse Machine Co. He was a member of the Society of Automotive Engineers.

Capt. Stuart Thomson, who three weeks ago completed his service with the ordnance department in Washington, died at his home in Brookline, Mass., March 23. He was a son of Prof. Elihu Thomson of the General Electric Co. After graduating from Harvard in 1908, Captain Thomson was associated with the research laboratory at the Lynn, Mass., branch of the General Electric Co., and then went to the Schenectady, N. Y., branch, where later he was attached to the consulting engineering department. At the time this country entered the war Captain Thomson was engaged in war research problems, later being called to Washington.

A Word With the Editor

Readers of *The Iron Trade Review* Express Themselves on Various Topics of Commercial and Industrial Importance

Editor, THE IRON TRADE REVIEW:

Regarding the disposition of government owned machinery we wish to state that in common with other dealers we have given this subject considerable thought. It is a matter that vitally interests both manufacturers and dealers in machine tools.

All sorts of rumors have prevailed among prospective purchasers of machine tools regarding the disposition that the government intends to make of these excess tools, which are scattered all over the United States. Over three months have passed since the armistice was signed and yet no positive plan seems to have been developed in regard to the disposal of this machinery. This militates very strongly against the resumption of business in the machine tool line on a normal basis; and when it is borne in mind that the machine tool industry is basic, it will be seen that these dilatory tactics on the part of the government are holding up production all along the line. As a consequence men are turned out of employment and the returning soldiers have no jobs. Were the government to settle this matter, and pay its bills, not only covering claims made on account of cancellation of contracts but also invoices for machines and material shipped long before the signing of the armistice; we have no doubt that an immediate impetus would be given to business of all kinds. It is our opinion that there would be jobs for all men who desire them.

A number of plans have been suggested for the disposal of the excess machinery now in the hands of the government. The most feasible plan was that which was discussed by General Jamieson in his address to the machine tool builders and dealers at their annual meeting in New York last December, whereby it was proposed that, so far as machine tools were concerned, they should be marketed through the manufacturers who built them, who in turn would sell them through their dealers in the various territories. It was proposed at that time that the machine tools would be sold at the price prevailing at the time of resale, not at the price paid by the government; that the government would allow the manufacturers a reasonable margin of profit, say 20 per cent which they would in turn split with the dealers in their various territories who would sell the machines. It was furthermore proposed that these excess machines should be marketed on the basis of a certain proportion of government-owned machines to a certain proportion of machines that would be manufactured by the builders; say for example that the manufacturer, through his dealer, would sell one machine owned by the government and on the next inquiry would sell a machine manufactured by himself, or two machines owned by the government to one machine manufactured or visa versa. This would enable the manufacturers to keep their organizations intact, pay overhead expenses and gradually dispose of the machines owned by the government. This, it seems to us, is the ideal method.

A method that now seems to be favored in some districts is for the government to lend these machines to the various vocational schools throughout the country for the teaching of the rising generation; disposing of as many as possible, also, to the other government departments such as the navy department, railroad administration, etc., and to foreign governments for the rehabilitation of devastated districts.

Either of these plans is to be preferred to a general indiscriminate dumping of this machinery on the market, which would simply result in the bankruptcy of many of the smaller concerns manufacturing and selling machine tools and the serious embarrassment of others.

Yours very truly,
Federal Machinery Sales Company,
By *J. L. Gough, President.*
Chicago.

Establish Trade Schools

Editor, THE IRON TRADE REVIEW:

As to what is the best plan for the government to follow in disposing of the machine tools it has on hand, it strikes us that the most essential thing would be for the different states or cities to organize trade schools and have the government turn over the available equipment to these schools or colleges.

For the past eight or 10 years the factories have been eliminating the apprentice plan for teaching the machinist's trade. Consequently they have been making specialty men and the machine shops are getting into worse shape each year due to the lack of mechanics.

If the government does not care to give the schools the machinery, let them arrange a long time note for the institutions to pay for the machines annually. A man establishing a trade school could get a lot of outside work from the different manufacturers of the city and receive payment from them for doing the work, at the same time giving the young men who attend this school a chance to learn the trade This would also make the school a self-sustaining proposition. It needs a little co-operation with the manufacturers of each city.

Yours very truly,
Wayne Machinery Co,
W. H. Meyer, Manager.
Fort Wayne, Ind.

Let the Farmer Know

Editor, THE IRON TRADE REVIEW:

It is interesting to read what Congressman Blanton had to say about the United States employment service. It is a shame that such a condition would be allowed to exist in this day and age of our much heralded democracy. It is certainly a shame that the average American would give up his last cent for patriotic reasons and then have it spent in the manner as set forth in Mr. Banton's speech.

Is it not possible for this speech to be printed in circular form and distributed to the farmers of this country? This could be done through the various organizations, usually known as the Grange.

The farmer is the one man, who will vote to offset the evils that are now menacing the country through the organization referred to by Mr. Blanton.

It is certainly a great satisfaction for a real American to read the things that you print in THE IRON TRADE REVIEW. You are not afraid to tell the truth. It is too bad for our country that more of the publications have not the same amount of backbone that the men have, who are responsible for issuing THE IRON TRADE REVIEW.

Very truly yours,
J. F. Richman, Manufacturing Manager.
Fostoria, O.

:: Here and There in Industry ::

INSTRUCTIONS have been received from the war department by the Domestic Coke Corp., Toledo, O., according to an announcement by its vice president, C. V. Critchfield, that the construction of its by-product coke plant at Fairmont, W. Va., may now proceed. Work on this project has been delayed since the termination of the war and it was generally believed that since the plant was planned to increase the supply of coal tar products for war use, it would be abandoned with the conclusion of hostilities. The Koppers Co., Pittsburgh, has the contract for this plant.

* * *

AN addition is being built to the Cleveland warehouse of Wheelock, Lovejoy & Co., Inc., 1800 Columbus road, that city, which will practically double its present storage capacity. In addition to its branch of special machinery steel, the company now will carry in stock a complete line of carbon and high speed steels as well as drill rods.

* * *

WHAT are claimed to be the two largest water-wheel generators ever constructed have been ordered by the hydroelectric power commission of Ontario, Canada, for its Queenstown development. The Westinghouse Electric & Mfg. Co., East Pittsburgh, has received this contract calling for two 45,000-kilovolt-ampere, 3-phase, 25-cycle vertical water-wheel generators of 12,000 volts.

* * *

AFTER building machinery for bookbinders, printers, etc., for about 60 years, the Oswego Machine Works, Oswego, N. Y., the entire business has been purchased by the Seybold Machine Co., Dayton, O., manufacturer of similar equipment. It is to be removed to Dayton as rapidly as possible, where the latter company's plant is being enlarged to accommodate the increased business.

* * *

THE engineering firm of Withington-Roberts-Wright Co. with ofices at 622 Swetland building Cleveland, has been organized and the following officers have been elected: President, P. H. Withington; vice president, A. B. Roberts, and treasurer, G. O. Wright. Branch offices have been established at 924 Broad street, Boston; 112 East Nineteenth street, New York; 1320 Munsey building, Baltimore; and 1514 Harris Trust building, Chicago.

* * *

INCREASING demands for its wood boring tools has made it necessary for the W. A. Ives Mfg. Co., Wallingford, Conn., to add to its floor space. Three new additions were completed in the past five months and a fourth now is nearing completion. The company expects to add to its expansive bit department so that the output will be more than doubled within the next three months. Two solid center auger bits are being added to its line, which will be ready about July 1.

* * *

THE New Standard Hardware Works, Mount Joy, Pa., manufacturers of a unit system and process for the hot tinning and retinning of all kinds of metals, have closed another contract for a No. 2 unit which will be installed at the Sturges & Burns Mfg. Co. plant, Chicago. This is the fourth unit so far installed by milk can manufacturers. During the past two months plants were installed and completed at the Buhl Stamping Co., Detroit, and also the National Enameling & Stamping Co., Milwaukee. Both units are used for hot tinning steel stampings for milk cans.

* * *

SINCE the Bonnot Co., Canton, O., was incorporated in 1891, its capitalization has been increased twice. In 1916, it was increased from $100,000 to $500,000 and that now has been doubled so that it now is a $1,000,000 corporation. The company manufacturers machinery for pulverizing coal, etc. The latest increase is in the form of 7 per cent preferred stock and the proceeds are to be used as working capital. Officers follow: President, L. C. Bonnot; vice president, Henry W. Harter; secretary and treasurer, A. A. Oldham. A. A. Holbeck is manager of the pulverized coal department, having invented the machine.

* * *

THE Pulverized Fuel Equipment Corp., 30 Church street, New York, has been organized to take over the business of the Locomotive Pulverized Fuel Co., and to broaden the interests of the latter to meet the requirements of the central power station, in metallurgical and industrial fields. The company installs and delivers in operation complete plants for the preparation, distribution, storage, feeding and burning of pulverized fuel for any steam generating or heating purposes whatsoever. The Canadian offices are located in the Transportation building, Montreal. The officers of the company are as follows: Chairman, J. S. Coffin; president, J. E. Muhlfeld; vice president, H. F. Ball; vice president in charge of sales, H. D. Savage; vice president in charge of engineering, V. Z. Caracristi, secretary-treasurer, Samuel G. Allen.

* * *

IN order that it will be in a better position to supply the growing demand for its products in the Oklahoma and Kansas territory, the Chicago Pneumatic Tool Co., Chicago, has opened offices and warehouses at Tulsa, Okla., at 313 Richards building and at El Dorado, Kans. Stocks of repair parts as well as the company's products will be maintained at both points to facilitate deliveries to customers. The Boston office has been removed to 182 High street, where a complete stock of repair parts and tools will be carried. F. S. Eggleston is Boston district manager of sales. This company's Detroit office was recently removed from 236 Hancock avenue to 502 Farwell building, Detroit.

* * *

THE W. H. Anderson Tool & Supply Co., Detroit, is celebrating its forty-eighth anniversary this month. The business was established in 1871 by William H. Anderson who was active in the organization up to the time of his death, Jan. 28, 1914. The original business of the company was the manufacture of tools used in the working of stone, marble and granite. To this was later added the manufacture of cold chisels, punches, calking tools and similar lines used by railroads, foundries and metal manufacturing companies, as well as hardware and plumbing supply houses. The company is now manufacturing a complete line of tools and special steel work used in construction work. The company has a jobbing supply house which is one of the most complete of its kind in Michigan. The officers are J. D. Anderson, president; G. J. Anderson, vice president; W. R. Anderson, secretary; A. G. Schuck, treasurer.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

MALCOME M. ROOT has been appointed assistant manager of the New York branch of the Walworth Mfg. Co., Boston. Louis K. Powelson has been transferred to the Philadelphia branch from the western division. Horace K. West now is assistant manager of the Philadelphia branch. A. W. Yeates, who for a number of years was traveling representative of the company in New England, has been promoted to take charge of the eastern division order department. W. E. Stevens succeeds him. Charles B. Worrick, who entered the employ of the Walworth Mfg. Co. as office boy 13 years ago, and who for five years has been head of the order department at the factory office, goes with George F. Elliott to the Boston branch to take charge of the order department there. G. E. Coates, who has been Boston office manager, has been transferred to New York to take charge of accounts and finances of the New York branch. R. A. Russell now has charge of telephone sales at the Boston branch. He has been with the company for 25 years and has been stock man and salesman at Boston for several years past.

Jack E. Shideler has resigned as purchasing agent for the Indianapolis plants of the Link Belt Co., Chicago, effective March 15. He has had charge of all purchases at Indianapolis for this company for the past 12 years. Mr. Shideler will represent the La Salle Steel Co., Chicago, in the Indiana territory, with headquarters at Indianapolis.

John Reekie will shortly take charge of the sales department of the Gray Mfg. & Machine Co., Ltd., 686 St. Clarens avenue, Toronto, Ont., when that company's name is changed to the Gray Ball Bearing & Mfg. Co., Ltd. W. J. McCallum is to be chief engineer and works manager. Both have been connected with the Chapman Double Ball Bearing Co., of that city, for several years.

Lemuel C. Biglow, who for a number of years was affiliated with the Morse Chain Co., Ithaca, N. Y., as New York manager and who for the past year has been connected with the Charles A. Schieren Co., New York City, as manager of their engineering department, has been made eastern representative of the W. A. Jones Foundry & Machine Co., Chicago, with headquarters in New York City.

R. M. Anderson, who formerly was chief engineer at the Washington state penitentiary, has become associated with the Walla Walla Iron Works, Walla Walla, Wash., as assistant manager and vice president. He received his advanced education at the Massachusetts Institute of Technology, Boston, and has had much experience in the manufacture of agricultural machinery.

T. O. Sechrist and C. J. Bodener have become assistant superintendents of machinery for the Louisville & Nashville railroad, the office of general master mechanic held by Mr. Sechrist having been abolished. C. F. Giles continues as superintendent of machinery. Milliard F. Cox, former assistant superintendent of machinery, resigned recently to become vice president of the Louisville Fire Brick Works, Louisville, Ky.

Charles W. Unbehaun, formerly New York City and general eastern territory salesman for the Bailey-Drake Co., Chicago, has become affiliated with the Black & Decker Mfg. Co., Baltimore, as branch manager. He will represent the company in eastern New York and Connecticut. J. F. Mackin, formerly with the Independent Pneumatic Tool Co., has been made Ohio representative of the Black & Decker company. His headquarters will be in Columbus.

E. A. Fisher, who for years was the active head of the Gas & Oil Engine Co., Philadelphia, has become sales engineer for the Bessemer Gas Engine Co., Grove City, Pa. B. L. Potter, formerly assistant manager of the Tulsa, Okla., branch of the Bessemer Gas Engine Co., has been transferred to Ft. Worth, Tex., to take charge of the recently opened branch office, which will look after the company's interests in the new oil field at Ranger, Tex.

Oscar Stegeman, Milwaukee, a widely known mechanical engineer and an authority on motor truck design, has become associated with the Reliance Motor Truck Co., Appleton, Wis., as chief engineer. Mr. Stegeman formerly was associated with the A. O. Smith Co., Milwaukee; the Palmer & Singer Motor Co., New York, and more recently was president and general manager of the Stegeman Motor Car Co., Milwaukee, now the Parker Motor Truck Co.

O. P. Palmer has been made purchasing agent for the Pratt & Whitney Co., Hartford, Conn., to relieve Mr. Storrs, who has gone south for a period of rest. For the past 15 years, Mr. Palmer has been connected with the Remington Arms Co., Bridgeport, Conn. He was assistant purchasing agent for six years in its cartridge works and then was promoted to be purchasing agent in the arms works, which position he held for three years. He also was employed as purchasing agent in the American Can Co.'s Liberty ordnance plant.

Fred H. Waldron, formerly Minneapolis representative of the Chicago Pneumatic Tool Co., Chicago, has been appointed manager of the pneumatic tools sales division of this company, succeeding J. G. Osgood, resigned. Mr. Waldron has been succeeded at Minneapolis by Nelson B. Gatch. J. I. Edwards has been made manager of rock drill sales division of the company, to succeed E. Eklund, who has been appointed special foreign representative. Mr. Eklund will leave shortly for Europe in the interests of the Chicago Pneumatic Tool Co.

Capt. George Sykes, R. A. F., A. M. I. E. E., who has been in the United States for the past four years, attached to the British war mission in a commercial capacity, is to sail for Europe in May. He has become affiliated with the Dutilh-Smith McMillan Co., an international house, as London manager of their engineering and railroad departments. For many years prior to the war Captain Sykes was connected with electrical manufacturers in their sales and engineering departments and with power and traction corporations. His New York address is 50 Broad street, and his London office is in the Central building, Totehill street, Westminster. Captain Sykes will aid American manufacturers of electrical and mechanical specialties, machine tools, etc., to introduce their products into England.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

LIEUT. COL. THOMAS F. BROWN, who recently secured his release from the United States army, has become affiliated with Butler & Hayes, Inc., industrial engineers, Boston, in the capacity of vice president and general manager. After the declaration of war with Germany, Col. Brown was commissioned major in the ordnance department and was designated as commanding officer of the school for instruction of ordnance personnel at Watervliet arsenal. Subsequently he was sent to France and England to make a study of transportation, storage and issue of explosives from the factories to the front line trenches. Col. Brown has had many years of experience as metallurgist at Watertown arsenal and in 1912 he was sent abroad by the government to investigate methods of steel and foundry practice with particular reference to the Hatfield process of manufacturing armor-piercing projectiles and other methods of producing shell forgings. After leaving the government service in 1916, he accepted a position as superintendent of the Framingham Foundry Machine Co., Framingham, Mass., which was manufacturing English and Russian projectiles and other foundry products.

Gifford K. Simonds, general manager of the Simonds Mfg. Co., Fitchburg, Mass., has been added to the board of directors of the First National bank, Boston.

G. A. Shoemaker has been given charge of the western sales zones of the Graton & Knight Mfg. Co., Worcester, Mass., which include Chicago, Milwaukee, Minnesota, Kansas City, Dallas, St. Louis and New Orleans.

Gustaf A. Johnson, for the past 10 years instructor in machine shop practice at the Worcester, Mass., Boys' Trade school, has resigned to accept a position with the Lombard Machine Co., in that city. He has been succeeded by John J. Curtin.

G. C. Conklin, who has been associated with the Oliver Machinery Co., Grand Rapids, Mich., for a number of years, assumed charge on April 1 of the new branch office which was opened in Chicago on that date by the company at 810 Railway Exchange building. George C. Ramer, of the Grand Rapids office will likewise be located in Chicago as sales engineer.

Capt. H. J. Welch, of the United States army ordnance department, who has been in charge of work at the New Britain Machine Co., New Britain, Conn., for the past year, is seriously ill at his home in Arlington, Mass.

James Shattuck, of Alfred Herbert, Ltd., Coventry, England, selling agent for the Norton companies and the Heald Machine Co., all of Worcester, Mass., in the British Isles, addressed the advertising club of Worcester, Mass., March 26, on foreign trade possibilities and methods.

P. R. Perkins has been appointed secretary of the Buckeye Dryer Co., Columbus, O., manufacturer of industrial dryers. Mr. Perkins formerly was with Morris & Co., Chicago. George H. Jones, Columbus, succeeds H. M. Chaney as treasurer of the Buckeye Dryer Co.

Albert A. Scheuch has been appointed assistant manager of sales of the Epping-Carpenter Pump Co., Pittsburgh, and Paul D. Goodman, formerly with the McClary, Jamison Machinery Co., Birmingham, Ala., has been added to the sales force of the company. F. S. Healey now is manager of sales in addition to his former office of chief engineer. F. F. Woods, who has been manager of sales, now is in New York as eastern sales manager of the company.

Charles M. Manley, head of the metropolitan section of the Society of Automotive Engineers, has resigned as vice president of the Curtiss Airplane & Motor Corp., Buffalo, and will devote his time to development of the Manley hydraulic transmission.

F. A. Bennett, formerly in the used and rebuilt machinery business at 30 Church street, New York, recently has associated himself with the machine tool department of the Dale-Brewster Machinery Co., 54-60 Lafayette street, New York. He will represent them in the metropolitan district.

Gen. Guy E. Tripp recently was decorated with the United States government distinguished war service medal, awarded for his excellent work in systematizing methods and practice which resulted in the hearty co-operation of industries producing ordnance material for the army. He has returned to his duties as president of the board of directors of the Westinghouse Electric & Mfg. Co., East Pittsburgh. Gen. Tripp entered the army with the rank of colonel as chief of the production division, ordnance department and later was promoted to the rank of brigadier general as assistant chief of ordnance.

E. L. Simpson has been appointed manufacturing superintendent of the Fort Wayne, Ind., plant of the General Electric Co. Mr. Simpson has been at the Ft. Wayne plant for the past two years, being transferred from the main plant at Schnectady, N. Y. He has served heretofore as superintendent of section A. He will have for his assistants Max Holz and A. Kaysor. B. C. Evans has been appointed tool supervisor of the Fort Wayne plant of the General Electric Co. He was formerly foreman of the toolmaking department and is succeeded by Frank Huffman, who has charge of all tools used in the plant. A tool committee has also been appointed and will review and advise on all matters pertaining to special tools, fixtures, molds, jigs, dies, etc. This committee will be composed of Messrs. Simpson, Kaysor, Holz and Evans.

W. T. Walker has been appointed president and general manager of the M. & S. Corp., Detroit, manufacturer of the M. & S. self-locking differential. Headquarters are to be removed to Cleveland. Formerly Mr. Walker was president of the Walker-Weiss Axle Co., Flint, Mich., and prior to that was connected with the Timken Roller Bearing Co. and the Weston-Mott Co. For eight months past Mr. Walker has been in government service, working on the production of military trucks. L. O. Haskins has been made sales manager of the company. He formerly was general manager of the O. & S. Bearing Co., Detroit. For two years he has been with the quartermasters' corps, in charge of track production in the Chicago district. R. S. Townsend has been made factory manager. He formerly was with the Walker-Weiss Co., and the Weston-Mott Co.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

AUSTIN M. MUELLER has been made general manager of sales for warehouse and mill products for all territory including Pittsburgh and the west by Joseph T. Ryerson & Son, Chicago. Mr. Mueller's connection with the Ryerson organization covers a period of 20 years. During that time he has traveled through every state in this country and as far north into Canada as railroad transportation would permit. For three years he was the Texas representative and later acted as manager of the New York and Minneapolis offices. In 1911 he was appointed assistant manager of sales at Chicago, but shortly after was stationed at St. Louis where he opened the Ryerson-Hagar plant. After three years in charge of the St. Louis warehouse he was called to Chicago to handle the main plant there.

E. L. Parker, president of the Columbia Steel & Shafting Co., Carnegie, Pa., is back at his desk after an absence of several weeks, following an operation for appendicitis.

Stuart B. Marshall, Roanoke, Va., consulting engineer and metallurgist, has established headquarters at Chevy Chase, Washington, retaining his Roanoke address.

H. F. Paddock has been appointed purchasing agent for the Saginaw Malleable Iron Co., Saginaw, Mich., a division of the General Motors Co. Until recently Mr. Paddock was mayor of Saginaw.

John Blair, who resigned recently as general foreman of the Union Steel Casting Co., Boston, has accepted a position as assistant superintendent of the New England Steel Casting Co., Springfield, Mass.

Charles H. Grady has been appointed manager of the raw material department of the Illinois Steel Co., at Chicago, succeeding C. F. Collins, effective April 1. Mr. Grady has been in the raw material department of this company for many years, most recently being stationed at South works, South Chicago.

J. E. Slimp has resigned from the sales department of the Ohio Brass Co., Mansfield, O., effective April 1. He will become associated with H. C. Dodge of Boston, who is at the head of several manufacturing companies in New England.

J. B. Marks has been appointed purchasing agent of the Colorado Fuel & Iron Co. with headquarters at Denver. He succeeds S. G. Pierson, who has

AUSTIN M. MUELLER

been elected treasurer. These appointments were effective March 17.

Floyd W. Adams, formerly connected with the Buick Motor Co. of Flint, Mich., has recently been appointed Michigan and Ohio sales manager for the Victor Mfg. & Gasket Co., Chicago, with offices at 811 Dime Bank building, Detroit.

G. L. Mayer, formerly purchasing agent of the Ohio Electric Railway Co., and who for the past year and a half was with the Joseph Joseph & Bro. Co., Chicago, will be associated with the James S. Miller Co., Chicago, as buyer, commencing April 1.

Robert L. Lake has resigned as manager of purchases and traffic for the Virginia Shipbuilding Corp., Alexandria, Va., effective April 30. Mr. Lake intends to return to his home in New York to engage in private enterprise.

E. L. McGraw, who about a year ago retired as purchasing agent of the Allegheny Steel Co. owing to ill health and who recently has been engaged in the sales and other departments of the company, has resumed his former position.

Lieut. Col. Louis J. Campbell, who returned from France recently, now is enjoying a two-week fishing trip to Florida, after which he will return to Youngstown, O., to assume his duties as vice president of the Youngstown Sheet & Tube Co. His outfit was under fire 82 days.

Walter Renton Ingalls, editor of the *Engineering & Mining Journal* for 14 years, has retired from that position to re-enter professional practice as consulting engineer. H. C. Parmelee, editor of *Chemical & Metallurgical Engineering*, becomes editor of the *Journal* and still retains his old position.

James D. Frisbie, who has been identified with the iron and steel scrap business for many years, and whose latest connection was with Housman & Wimmor, Pittsburgh, for several years, will be associated with the James S. Miller Co., Chicago, as general manager, commencing April 1.

John B. Canfield, formerly master mechanic of the Boston & Albany railroad, who resigned in 1916 after 30 years of continuous service, has become associated with the Harley Co., Springfield, Mass., maker of castings, as special representative and counsel.

J. P. Pero Jr., vice president and sales manager of the Warren Steel Casting Co., St. Louis, has been placed in charge of the general sales offices, recently established by the company in the Boatmen's bank building, St. Louis, Railway Exchange building, Chicago and the Book building, Detroit.

F. T. Dickinson, formerly superintendent of the Railway Materials Co.'s foundry at Toledo, O., has been appointed general manager of the new plant of the Colorado Brake Shoe & Foundry Co., Denver. Mr. Dickinson was affiliated with the Railway Materials Co. for 10 years and during this period he started and operated the plants of this company located at Phoenixville, Pa., and Stevens Point, Md. The Colorado Brake Shoe & Foundry Co. is modernly equipped throughout and has a capacity of 50 to 60 tons daily.

Tool Trade Still on Way to Normal

Steps Made in March Toward Prewar Basis Promise Much Progress for April—Automotive Industries Maintain Steady Demand—Export Market Offers Good Prospects—Railroad Business Doubtful Quantity for Some Time

PROPHESIED developments in the machine tool market for March did not materialize. As viewed in February, the matter of readjustment appeared likely to be well advanced last month. While steps in that direction were made, it is apparent it will require further time to spell a more nearly complete return to a normal basis and it is expected that by the end of April, the sellers of machinery will enjoy an absence of the disturbing elements which had their effect on the past month's trading. Chief among these was the failure of congress to pass the $750,000,000 railroad and $800,000,000 naval appropriation bills as well as the sundry civil bill which was to benefit the Emergency Fleet corporation. The filing of tax returns also acted as a deterrent on tool buying in many instances. In contradistinction to these however, were other factors than mere buying and selling which influenced the tool market for good. Their influence is just now beginning to be felt. First of all came the signing of the informal war contract measure and while with its customary deliberation, the government has not settled its bills, still manufacturers and others have the assurance they will be paid some time and can proceed with other plans. This was accompanied by a reduction in prices of building supply materials, calculated to stimulate new construction. The good effect of this is reflected in the increasing number of inquiries for equipment for plant additions and new structures. Depended upon likewise to have a far-reaching effect on the machine tool market is the recent announcement of reduced prices on iron and steel. This does not foreshadow reductions in the prices of machine tools so much as it means lower prices on other items which will stimulate industrial building.

Automobile Industries Large Buyers

AS has been the case for several weeks past, the biggest demand in March came from the automobile and allied industries. The Hudson Motor Car Co., Detroit, was a large buyer as were other Michigan and Ohio automobile manufacturers. The General Motors Corp. purchased considerable additional equipment for its Ohio and Michigan plants, particularly for the Olds Motor Works, Lansing, Mich. It was announced that the Chandler Motor Car Co., Cleveland, would buy machinery soon for the new Cleveland Automobile Co. The H. H. Franklin Mfg. Co., Syracuse, N. Y., bought a fair sized number of tools and offered a large list for sale. The Erie Specialty Co., Erie, Pa., purchased lathes, and planers. The Automatic Products Co., Detroit, bought screw machines and bolt cutters in Cleveland while the Jones Gear Co., that city, made some tentative arrangements on a large list of tools it will require in its operations. The Standard Steel Car Co., Pittsburgh, is expected to issue a list as is the Willys-Overland Co., Toledo, O., to increase their respective outputs.

Exporters Have Splendid Selling Month

THAT foreign demand will at best be spotty until after the peace terms are concluded is generally conceded. Still some sizable business came to this country last month from England, France, Belgium, etc., despite certain import restrictions. About the middle of the month, it was announced that France would permit its manufacturers to buy about $40,000,000 worth of American machine tools, contingent upon certain credit arrangements which now are being worked out. For France, the French high commission, 65 Broadway, New York, made purchases amounting to several hundred thousand dollars. Numerous inquiries came in from private interests in France. England too made some sizable purchases. That country issued blanket licenses for the importation of a great many standard American machine tools, which encouraged makers generally. One Cleveland builder of turret lathes reported large sales to its foreign representatives for stock. Just how long these will last is not known and of course serves as no basis for market comparisons.

Railroad Business Still Questionable

FAILURE of congress to pass the $750,000,000 railroad appropriation bill was disappointing to a number of dealers who were counting on sizable orders from railroad purchasing agents, all of whom have been preparing lists. Substitute financial arrangements are being made and several fair sized loans have been made to railroads by the War Finance Corp. The Baltimore & Ohio and the Boston & Maine roads inquired in the east for a few tools as did the Rock Island in the west. The Pennsylvania lines west issued many inquiries but placing of its orders is postponed until its loan of $75,000,000 is consummated.

Government-owned Tool Proposition More Involved

LATEST developments in connection with the government-owned machinery proposition include the consideration of a uniform contract for its disposal through makers and dealers. This followed the issuance of instructions to branch ordnance offices to sell such machinery at auction or through sealed bids. In the meantime, lists of government-owned tools appear from time to time in the open market and in view of the agreement of several weeks ago between the machine tool section of the war department and the builders of machinery, charges of broken faith are not lacking. It is stated that bids were returned unopened on the equipment at the plant of the Cribben & Sexton Co., Chicago, and that the machinery is to be sent to the Rock Island arsenal for storage or future use. One inquiry appeared in the east for 20 tools for a vocational school but was withdrawn and the announcement made that the tools needed will be supplied from government stocks.

Used Machinery Meets Ready Sale

USED machinery offerings have been so numerous and prices so attractive that the sale of new machines has been effected. Several lots of equipment for resale appeared in the market. One of the largest comprised about 1000 tools from the plants of the International Arms & Fuse Co., Inc., Bloomfield, N. J. It included many standard new tools. At the sale of $1,000,000 worth of equipment of the Stenotype Co., Indianapolis, 72 to 78 per cent of the cost of similar new tools represented the prices obtained. A New York dealer bought in excess of 125 machines formerly used in the shellmaking department of the Symington Machine Co., Rochester,

Tool Trading Takes a Real Spurt

Improvement Apparent, However, Not Traced Directly to Reductions in Raw Material —300 Tools Wanted in East—Government Aid to Stimulate Export Market —Contract Drawn Up for Disposal of Government's Tools

IMPROVEMENTS, while slight are apparent in some of the machine tool markets. This is particularly true in Cleveland, where inquiries are numerous and of fair size and where some pleasing business has been closed recently. A semblance of the days prior to Nov. 11 with their keen demands coupled with inability to obtain machines for prompt delivery is shown. This business is coming not alone from the automotive industries, which have been so active in all districts of late, but from the oil well supply and air compressor interests as well. In the east, the largest inquiry of recent weeks, calls for 100 each, lathes, grinders and drills for boats of the Submarine Boat Corp., Newark Bay, N. J. The Standard Oil Co. has revised its list of 25 tools for Bayway, N. J. In Chicago, where the fairly numerous inquiries are coming from diversified lines, the main inquiry is for 15 tools for the Gary plant of the Illinois Steel Co. In the Pittsburgh territory, inquiries are numerous but bookings small.

Dealers agree that it is too soon to note the direct effect of reduced raw material prices on machine tool markets but think it will be small. Their opinion is, however, that the equipment industry will benefit indirectly by reason of the low prices on iron and steel acting as a stimulant for building projects, which will give rise to large equipment needs. A few reductions in tool prices are announced; one of 15 per cent on shapers and one of 20 per cent on turret lathes.

With the announcement that the War Finance Corp., now has at its disposal, the government's $1,000,000,000 fund to stimulate foreign trade, the export market takes on an improved tone. An exporting house may borrow as high as $50,000,000 to develop its business. Approximately $100,000 worth of equipment was bought in this country recently for England's railroads and large purchases for France continue to be made by the French high commission, located in New York.

That further financial help already extended to railroads and amounting to $135,000,000 to March 28, will bring about the long expected era of buying of much needed equipment, is the hope of tool builders and dealers, although it is felt that any such aid given must fall far short of the immediate needs. In the meantime a few inquiries are appearing. The Chicago, Burlington & Quincy railroad put out a fair sized inquiry. The Pennsylvania continues to ask for quotations, but these inquiries do not materialize.

Of interest to tool sellers generally, is the meeting held in Washington last week at which plans for the disposal of the government's tools again were discussed. At it a tentative contract was drawn up, which was satisfactory to those present. This contract which now is being considered by the directors of the various companies which will sell the tools, provides for the disposal of the equipment through makers and dealers and if acted upon favorably, will be made public.

Manufacturers of machine tools in Canada are about to take steps to dispose of their equipment more rapidly. For some time they have been working on stock and actual business placed has been small. They all feel the Canadian government should supply its needs from new equipment and not from the used machinery offerings from former war work plants. Large demands are expected to materialize from the many building projects now in a formative stage.

Submarine Boat Corp. Inquires for 300 Tools

FOLLOWING a meeting in Cincinnati, recently, prices on shapers were reduced 15 per cent. This follows the action taken in that city a couple of weeks ago, when a reduction of 20 per cent was made in planers. A reduction of 20 per cent by an Indiana builder of turret lathes also was reported this week, but it is thought in some quarters that this report has been confused with a reduction made by the company early in March. So far reductions by two manufacturers have been reported in turret lathes.

The largest inquiry to come out in the eastern machine tool market during the past week has been that of the Submarine Boat Corp., Newark Bay, N. J. One hundred 16-inch lathes, 100 grinders, and 100 drills are included in the list. These tools, it is understood, are for installation on vessels. Another sizable list is that of the Standard Oil Co. of New Jersey, involving approximately 25 standard machine tools for Bayway, N. J. The company is enlarging its refinery at a cost of $5,000,000. Machine tool requirements alone will aggregate $300,000. In addition, there will be five overhead cranes, including one 5-ton, one 10-ton, one 35-ton and two 20-ton as well as one gantry crane, specifications for which will be issued in about a week. Included in the equipment purchased so far for Bayway, are $300,000 worth of turbo-blowers. This company likewise has purchased five 15-ton locomotive

Our 18 inch ROLLING MILLS

After the billets have been properly heated, they are one by one taken from the furnace and submitted to the operation illustrated above. Here they are rolled to a diameter of 3 inches—and the heaviest part of the work is done. Next they are sheared off to desired lengths and prepared for further reduction in smaller rolls, or must be annealed and undergo the various rigid inspections to which every piece of Ludlum Steel is subjected.

Our next advertisement in this publication will show a close up view of one of these rolls.

May we explain to you *why* the majority of large users and twist drill and milling cutter manufacturers in America are using *Ludlum Steels*?

Just tell us you are interested.

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Ludlum Consistently Uniform Brands:

Mohawk Extra High Speed Steel	Pompton Carbon Tool Steel	Albany Alloy Tool Steel
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Teton Ball Bearing Steel	Yuma Chrome Magnet Steel	Seminole "Foolproof" Chisel Steel

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cranes for export. In addition to the enlargement at Bayway, which includes a power plant, the Standard Oil Co. of New Jersey will build four refineries as follows: Humbolt, Tex., Charleston, S. C., Constania and Roumania. Lists have been issued for the latter plant. For the Humbolt plant, one 25-ton and one 35-ton locomotive crane will be required but no general list of tools has been issued, so far as can be learned. Aside from these inquiries, little new domestic business has been noted.

Sentiment with regard to railroad buying has again taken a turn for the better. Director General Hines, in an address at Pittsburgh recently, stated that as much of the program for improvements as possible would be carried out, thus correcting the impression which had gained currency that a rigid curtailment would be enforced. At present, a survey is being made of the transportation situation for the next few months, and a program for providing capital for whatever may be required is being worked out.

Outstanding in export buying of machine tools during the past week has been the purchase of about $100,000 worth of equipment for the railroads of England. So far this year, however, the biggest foreign purchaser of machine tools in this country has been France. Through the French high commission alone, it is asserted, several hundred thousand dollars worth of tools have been purchased. A stimulating factor in export circles within the past few days has been the announcement at Washington that the government's billion dollar fund for financing foreign trade will be ready soon for exporters through loans from the War Finance Corp. As high as $50,000,000 may be loaned to individual companies or export associations.

Crane buying appears to be slightly improved, although trading still is far from active. The Philadelphia Roll & Machine Co. has purchased a 20-ton electric crane from the Milwaukee Electric Crane & Mfg. Co. A similar sized crane has been bought from the Champion Engineering Co. by James Shewan & Sons, Inc., Brooklyn, ship repairers. The Bethlehem Fabricators, Inc., Bethlehem, Pa., has placed one 20-ton, one 5-ton, and two 10-ton electric cranes, the order, it is understood, going to Pawling & Harnischfeger. The Treadwell Engineering Co., Easton, Pa., has bought a 10-ton electric crane from the Shaw Electric Crane Co. The United States Lighthouse service closed bids March 28 on one 10-ton crane, with 28-foot span, for Tompkinsville, Staten island, N. Y. The ordnance department has reinstated orders for 10 20-ton electric cranes with the Milwaukee Electric Crane & Mfg. Co. These cranes, originally, were planned for the two government nitrate plants, to be erected in Ohio, one near Toledo and the other near Cincinnati. It is believed that the action just taken was due to the fact that work on the cranes had been far advanced. Included in the few new inquiries out are a 10-ton electric crane, with a 41-foot span, and a 3-ton crane, with a 24-foot span, for the Lucas Supply & Equipment Co., York, Pa., and a 5-ton overhead crane for the General Electric Co., Schenectady, N. Y.

Improved Market Expected Soon in Chicago

SIGNS are appearing in the machine tool market in Chicago that better conditions may be expected and that the volume of business is likely to be largely increased. This does not mean that present buying is reduced to a low point, as records show that in many cases the volume of business at present is in excess of that enjoyed during similar periods in 1917, which was an excellent year. Inquiry is large and comes from a variety of sources without any particular branch of industry predominating in the machinery market as a whole.

Manufacturers of tractors have been active in placing new equipment, but at present this line of buying has slackened.

The first general reduction in prices has come on planers, which have been reduced from 15 to 20 per cent from prevailing levels. It seems that planers are more dependent on raw material than on labor in the elements of cost and thus can be reduced before other machines in which labor is a larger factor.

The Illinois Steel Co. is inquiring for about 15 tools, including medium and heavy lathes, forging equipment and bolt cutters, for the Gary plant. Railroads are inquiring for a few scattered tools, the only line putting out a large inquiry being the Chicago, Burlington & Quincy railroad, but in the latter case the general opinion is that buying will not be done on the list as a whole.

The Central Forge Co. at Detroit, will build a forge shop and heat treating shop. The Brown Wall Machine Co., Holland, Mich., will build a foundry addition. The Detroit Seamless Steel Tubes Co. has bought a site on which it will erect a large plant. The city of Hibbing, Minn., will take bids shortly for a municipal power plant. The Ventura Mfg. Co., Ventura, Cal., will build a machine shop, forge shop and assembling plant this year and plans have been made for a foundry and pattern shop to be built later.

Inquiries Numerous, Orders Few in Pittsburgh

INQUIRIES for machinery and tools in the Pittsburgh district are fairly numerous, but actual bookings are few and small. The railroads, which were expected to start business going, still are lacking sufficient funds to proceed with purchases. A few inquiries were put out recently by the Pennsylvania railroad, lines west, but it is said that inquiries from this source since the first of the year have thus failed to materialize into actual orders. A few sales are being made from stock, but big bookings apparently are waiting on announcements of price revisions in keeping with the recent reductions in iron and steel prices. A steel car plant is planned for Greenville, Pa., by a new company, capitalized at $3,000,000, in which Governor Sproul of Pennsylvania is said to be interested. When work on this plant will start has not yet been reported, but it suggests future businss in equipment.

Cleveland Dealers Report Keen Demand

CHANGES have come to the Cleveland machine tool market, which have increased business to such an extent that dealers are reminded of the prearmistice days. One prominent dealer reports that in two days last week, he closed orders which aggregated approximately $40,000. Other dealers report that inquiries are coming in at a splendid rate, and their chief difficulty is to locate the machines needed. This is true of both new and used machinery. Deliveries have not improved greatly; on machinery for rolling mills, a 90-day delivery is offered and on punches and presses, the best to be had is 60 or 70 days. While there are plenty of lathes obtainable, there is a dearth of No. 2 grinding machines. Makers offer September and October deliveries and dealers report a keen demand for this type of equipment. This demand of course is for immediate shipment which adds to their difficulties.

One of the chief changes noted in the market however, is in the character of the demand. For several weeks past, the automobile and automotive products industries have furnished practically all the inquiries for prices and most of the orders. In the past few days however, the oil well machinery and air compressor manufacturers have forged to the front, with the decided spurt taken in

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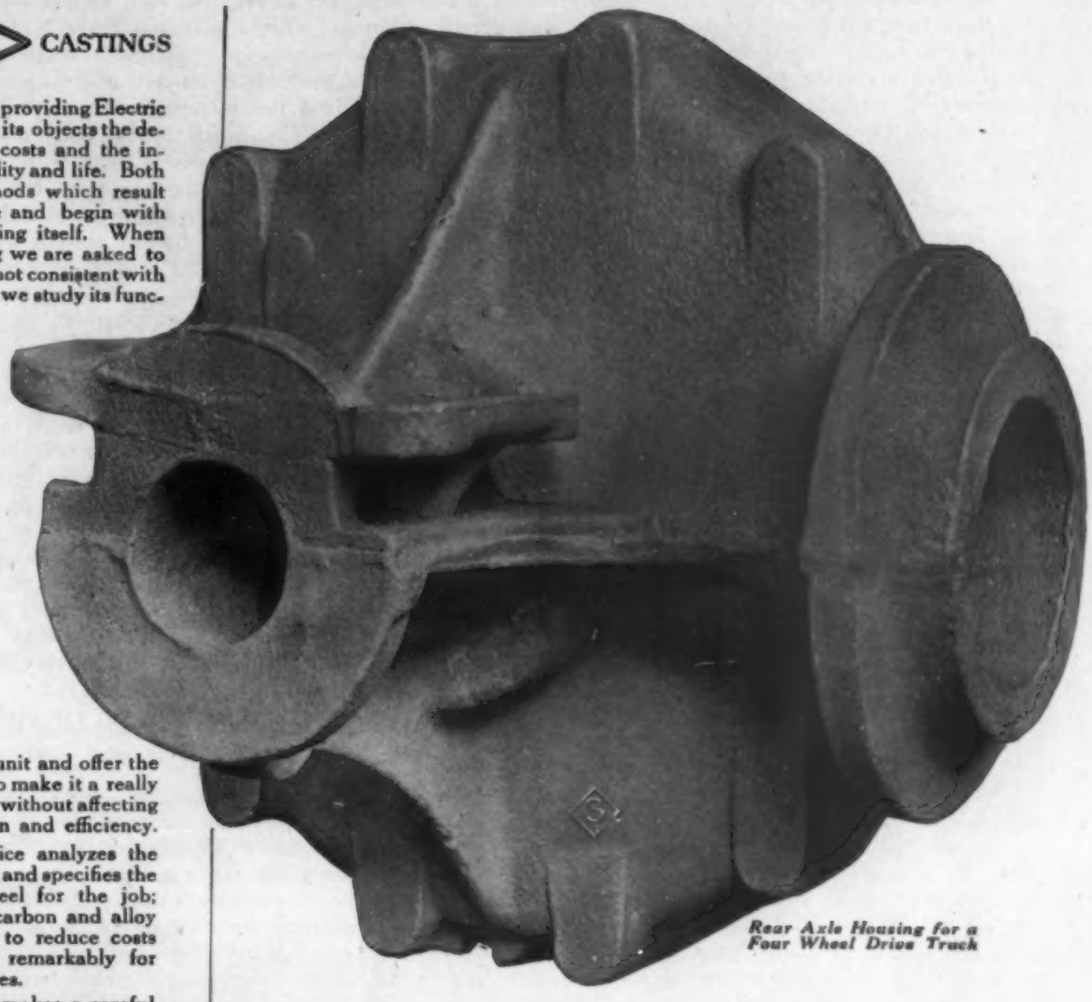
The Sivyer Service of providing Electric Steel Castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency.

Secondly, Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly, Sivyer Service makes a careful study of the pattern and molding problems involved, for improper gating and insufficient risers are often the greatest wasters of machining labor and metal.

Fourthly, Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short, the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little even on the natural freedom of electric steel from occluded gases and on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.



Rear Axle Housing for a Four Wheel Drive Truck

AFTER certain manufacturers had experienced expensive difficulties in getting housings for the rear axles of four-wheel-drive trucks, they came to us. By the scientific use of risers we eliminated the difficulties others had had in getting the bosses of this casting uniformly sound. By our solution of the gating and core problems involved, we freed the castings from shrink holes and cracks that had previously made machining costs high. The successful solution of every factor in the molding problems involved in this casting, is typical of the thoroughness which has made the market for Sivyer Castings a national one.

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the oil and gasoline industries. Large quantities of machinery have been purchased by these interests and action is pending on further inquiries. Five tools are wanted by the Niebling-Markstein Co., Cincinnati, manufacturer of air compressors, refrigerating machinery, etc., as follows: one each, 5-foot radial drill, 30 to 32-inch by 8 to 10-foot planer, 24 to 32-inch shaper, large milling machine, lathe with 42-inch swing and 24-foot bed.

Automotive interests have not supplied their needs entirely however and continue to keep machinery dealers busy. The Hudson Motor Car Co., Detroit, has been a recent buyer and one Cleveland dealer is in receipt of a letter from Henry Ford which states that while not in the market at present, his company soon will be for considerable equipment. It is believed that this has nothing to do with the possible equipment needs of the new company he is forming to build a low-priced car, but that the machinery will be for his tractor plants. Several other tractor companies have issued inquiries but for the most part, these are small, since many of them simply are assembling propositions and for such little machinery is required. The Post Tractor Co., Cleveland, is in the market for lathes and shapers. Graham Bros., Evansville, Ind., with $1,000,000 capital are to erect a plant to make tractors and will issue a list shortly. The Acason Motor Truck Co., Detroit, has an addition under way. The Evans Truck & Axle Co., Auburn, Ind., will equip a plant soon to manufacture trucks. The C. R. Wilson Body Co., Detroit, wants a double action 10-ton toggle press, with 96 inches or more between uprights. The Maibohn Motors Co., Racine, Wis., is to remove to Sandusky, O., where it will erect three buildings. A list of tool requirements is expected shortly. The Mueller Metals Co., Port Huron, Mich., is installing equipment for the manufacture of automobile parts. The Richmond Pressed Metal Works, Inc., Richmond, Va., wants metal-working machinery. The Torbenson Axle Co., Cleveland, wants a press, a lathe and a special machine.

Radial drills, multiple spindle drills, lathes, milling machines, planers, etc., are in demand from miscellaneous industries. One of the largest lists of such equipments comes from the Lutz Co., Inc., Philadelphia, as follows: One each 60 and 84-inch vertical boring mills; one each 60-inch x 30-foot, 48-inch x 24-foot, and 36-inch x 20-foot triple-geared heavy duty lathes; two 24-inch x 14-foot heavy duty double back geared lathes; one 24-inch x 12-foot same; one 24 to 30-inch x 16 to 20-foot heavy duty boring lathe; one 24-inch x 8-foot chucking lathe with tool post turret; one each 48-inch x 14 to 16-foot, 60-inch x 20-foot planers and one Dietrich & Harvey 48-inch x 14-foot planer; one each 12-spindle and 16-spindle high speed multiple drills and one 6-foot radial drill. Another fair sized list is received from the Twin City Forge & Foundry Co., Stillwater, Minn. It calls for one each 16-inch x 8-foot tool room lathe with attachments, 20-inch x 8-foot standard engine lathe, No. 3 universal milling machine, universal grinder, 24-inch x 6-foot planer, 16-inch crank shaper, hollow spindle cut-off machine, 6-inch power hack saw and 12-inch floor grinder. The Minerva Mfg. Co., Cleveland, wants a 24-inch used planer. The Bowen Products Co., Detroit, is understood to have closed on a grinding machine. The Keystone Iron & Metal Co., Williamsport, Pa., wants a gate shear to cut 60 or 72-inch plates or larger. The Williams Co., Syracuse, N. Y., is asking for a gate shear, with capacity 13 to 16 inches x 45 to 60 inches. The Hill, Curtis Co., Kalamazoo, Mich., is anxious to obtain one Foster No. 1 B universal turret lathe in first class condition. The Douglas & Rudd Mfg. Co., Bronson, Mich., is advertising for a No. 53 and a No. 515 National Acme 4-spindle screw machines. The Toledo Cooker Co., Toledo, O., wants several toggle presses and seaming machines. The Western Structural & Machine Works, 206 South Washington street, Peoria, Ill., will soon be in the market for presses, punches, shears and other machinery.

Active Business Expected Soon in Canada

SIGNS are present in Canada of an active campaign being undertaken by several large companies manufacturing machine tools, looking to more rapid selling of their products. Manufacturers are working for the most part on stock, while actual business placed is rather small. Dealers in machinery are of the opinion that they are now approaching the state where the sale of new machine tools will commence. For some weeks past there has been in the metal working industries a fair demand for equipment, but these requirements have been filled largely from the used machinery classes. Rebuilding and selling used machinery is the big end of business for machine tool dealers, a fair demand existing for used equipment.

A strong feeling is apparent that the government, in making its purchases should go into the market for new equipment rather than to buy up machinery from shell plants, etc. If the government decides on this course it will give a great boost to the present quiet attitude of the market.

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Factories

BERLIN, N. H.—Bids closed March 31 for the construction of a foundry, 58 x 150 feet, for the Berlin Foundry & Machine Co.

BOSTON.—The Mead Morrison Mfg. Co., 125 Prescott street, plans a machine shop, 1-story, 75 x 215 feet.

BOSTON.—The Graham-McLain Co. has been incorporated to make motors, etc., with $25,000 capital, by Ernest G. Graham, Hubert E. McLain, Natick, Mass., and James E. White.

BOSTON.—The Hub Electric Steel Casting Co. has been incorporated with $90,000 capital, by Charles Van Stone, South Boston, Mass., Charles V. S. Paul and E. P. Van Stone.

BOSTON.—The Masters Mfg. Co. has been incorporated to make speedometers, gasoline meters, etc., with $100,000 capital, by Irvin W. Masters, Charles H Gifford, Portland, Me., and E. G. Davis.

BOSTON.—The New England Airplane Co. has been incorporated with $50,000 capital, by W. E. Nightingale, Phillip C. Nash, Allston, Mass., and Amos L. Taylor.

BOSTON.—The New England Tool Co., Inc., has been incorporated with $50,000 capital, by Frederick

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—Furnace heat does not affect their perfect service. "Forty below zero" weather cannot crack them. They last forever—always sturdy, always smooth-faced.

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—And they cost *less* than many types of floors.

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Plants: Indianapolis Minneapolis Mobile Seattle Norfolk

Branch Offices:

315 Peoples Gas Bldg., Chicago
204 Erie County Bank Bldg., Buffalo
152 Bay St., Toronto, Canada
Berkley Ward, Norfolk
Masonic Temple, Mobile
222 Society for Savings Bldg., Cleveland
31 Transportation Bldg., Philadelphia
828 Plymouth Bldg., Minneapolis
445 Central Bldg., Seattle

E. George, Carl H. Kothe, Jamaica Plains, Mass., and A. L. Saunders.

CHELSEA, MASS.—The Pearlbert Mfg. Co. has been incorporated with $25,000 capital, to make farming machinery by Herbert D. Stenson, Perley C. Fillmore, East Somerville, Mass., and W. R. Stenson.

EVERETT, MASS.—The Standard Envelope Sealer Co. has awarded a contract for a 2-story plant, 65 x 120 feet.

GARDNER, MASS.—The Central Oil & Gas Stove Co. plans to build 1-story, 50 x 120-foot, and 3-story, 40 x 50-foot addition. Alterations will also be made to the present plant.

HOLYOKE, MASS.—The Walsh Holyoke Steam Boiler works will build a 2-story machine shop.

MILFORD, MASS.—A power house and blacksmith shop will be erected here by the Milford Pink Granite Co.

NEW BEDFORD, MASS.—The Passaic Cotton Mills Co. has had plans prepared for a 1-story, 36 x 69-foot machine shop, estimated to cost $10,000.

WORCESTER, MASS.—The Worcester Steel Products Co. recently incorporated with a capital of $75,000, has taken over the plant of Henry L. Hanson.

NEW HAVEN, CONN.—Plans are being prepared for a 100 x 180-foot foundry for the Marlin-Rockwell Company.

WATERBURY, CONN.—The Waterbury Motor Co. has been incorporated with $25,000 capital to manufacture automobile parts, by James R. Lawler, P. J. Lawler and H. E. Mangin.

Along the Atlantic Coast

BROOKLYN, N. Y.—A new iron foundry is to be established at the foot of Sullivan street as the result of the purchase of property here by the Pigot-Sayre Co.

BROOKLYN, N. Y.—The Rosenthal Engineering Co. is in charge of constructing a plant for the Englander Spring Bed Co., which will be 105 x 200 feet. The estimated cost is $200,000.

BUFFALO.—The Lackawanna Steel Co. will build an addition 50 x 90 feet and 25 x 42 feet.

BUFFALO.—The Bancroft-Jones Corp., Mutual Life building, will build a plant here to manufacture fabricated steel. George C. Jones is manager.

ELMIRA, N. Y.—The Willys-Morrow Co., J. E. Morrow, secretary, is reported planning a forging building.

NEW YORK.—Several factory buildings on Eleventh avenue have been leased by the Chevrolet Motor Co. for the production of motors.

NEW YORK.—Joseph Stern & Son, Inc., 616 West Fortieth street, has plans drawn for alterations to their boiler house and coal bunkers.

NEW YORK.—The Chevrolet Motor Co., 600 West Jones street, is reported planning alterations to factory buildings.

NEW YORK.—Alterations will be made to the power plant owned by Gertrude E. Ludlem, Goshen, N. Y.; Frank H. Dexter, 391 Eighth avenue, Brooklyn, is architect.

NEW YORK.—The E. J. Wiggins Electrical Corp. has been incorporated with $75,000 capital. The company will locate at Buffalo. The incorporators are E. J. Wiggins, R. Siemer and C. G. Babcock.

NEW YORK.—Architect Ferdinand Savignano, 18 East Forty-first street, has drawn plans for a tin can manufacturing plant. The name of the owner has been withheld.

NEW YORK.—The George P. Brown Corp. has been incorporated as shipbuilders, with $5000 capital, by G. P. Brown, B. F. Parks and F. W. Fielding, 345 West Fifteenth street.

NEW YORK.—The Charles H. Monson Co., link connections and machinery, has been incorporated with $25,000 capital, by C. S. Monson, E. Campbell and B. Darrach Jr., 353 Canal street.

NEW YORK.—The Friedrich Hafekost Tool & Instrument Co. has been incorporated with $6000 capital, by P. J. Bach and M. F. Schreiber, 2429 Myrtle avenue, Brooklyn, N. Y.

NEW YORK.—The Arbos Steel Products Corp. has been incorporated with $100,000 capital, by A. Foulds Jr., W. F. Ashley Jr., and J. S. Galland, 15 John street.

NEW YORK.—Frances Augusta Sands, 14 Wall street, has had plans drawn for a plant, which when completed will be leased by the Standard Soap Fastener Corp., Newton F. Fenner, president, 47 East Twelfth street.

NIAGARA FALLS, N. Y.—The Carborundum Co. will build a 1-story addition, 58 x 69 feet.

NIAGARA FALLS, N. Y.—The Niagara Falls Metal Stamping Co., 235 Tenth street, contemplates the erection of a plant.

ROCHESTER, N. Y.—The Eastman Kodak Co. plans to build an addition, at an estimated cost of $250,000.

ROCHESTER, N. Y.—Application has been made by the Rochester Railway & Light Co. for permission to issue securities for $500,000 for betterments and plant extensions.

WATERTOWN, N. Y.—Plans have been prepared for a municipal electric lighting plant.

ALTOONA, PA.—The Altoona & Northern railroad will replace its Juniata car repair shops, recently damaged by fire, at an estimated cost of $75,000.

BEATTY, PA.—St. Vincent's College is reported planning a power plant at an estimated cost of $200,000.

BEAVER FALLS, PA.—The Beaver County Light Co. will make improvements to its plant.

ERIE, PA.—The Erie Malleable Iron Co. will have plans prepared for a 4-story addition, 40 x 60 feet.

ERIE, PA.—The Lake Erie Welding & Spring Co., 1116 Sassafras street, plans a building, 30 x 100 feet, and is in the market for a small amount of equipment, including a 5-ton hoist.

FARRELL, PA.—The American Sheet & Tin Plate Co., Pittsburgh, will spend $500,000 for improving its plant here.

GREENSBURG, PA.—The county commissioners plan a power plant here. Address Berkey H. Boyd, county courthouse.

GREENVILLE, PA.—Governor Sproul is reported largely interested in a new company which will build a steel car plant here.

HAGERSTOWN, MD.—A plant with a capacity of about 20 tons of brass and aluminum ingots daily will be erected here by the Maryland Smelting & Refining Co. Joseph Brenner is president.

HARRISBURG, PA.—The Liberty Can & Sign Co., Lancaster, Pa., recently was incorporated with $15,000 capital, by T. W. Dubbs, J. E. Goodell, J. N. Hetrick, G. W. Lemaster and John L. Ruth.

HUNTINGTON, PA.—This city plans a filter plant at a cost of $15,000.

JOHNSTOWN, PA.—The Penn Foundry Co. will build a modern plant at Moxham, Pa.

MERCER, PA.—The Elliott-Blair Steel Co., New Castle, Pa., will rebuild its plant here.

MILLERSBURG, PA.—The Keystone Reamer Co. will build an addition.

MONTOURSVILLE, PA.—The Lycoming Silica Sand Co. has had plans drawn for a sand washing plant.

NORFOLK, VA.—The Empire Machinery Co., 217 Thirty-fifth street, has started alterations to its plant.

PHILADELPHIA.—An 80 x 160-foot plant will be erected here by Max M. Sladkin, for the manufacture of bicycles and bicycle parts.

PHILADELPHIA.—The Pennsylvania Electric Welding Co., recently was incorporated with $10,000 capital, by John S. Thomson, Sidney Mitchell and Clayton R. Plunkett.

PHILADELPHIA.—A permit has been granted to make alterations and to build a small addition to the foundry of the Lloyd Garrett Co., 1611-15 North Front street. The contract has been let to Mitchell Bros., 2125 Race street.

PITTSBURGH.—The Consumers Mining Co., Bessemer building, will build a pumping plant 28 x 40 feet, at Harmarville, Pa.

READING, PA.—The Reading Valve & Fitting Co. has been incorporated with $100,000 capital, by J. Turner Moore, Wyomissing, M. G. Moore, Reading, and W. S. Deitrich, Kutztown, Pa.

SHARON, PA.—The Carnegie Steel Co. plans to rebuild its carpenter and pattern shops recently damaged by fire.

JERSEY CITY, N. J.—The city commissioners recently took preliminary steps toward the construction of a port terminal, to be built at the junction of the Hackensack river and Newark bay.

NEWARK, N. J.—Among the recent New Jersey incorporations is that of the Atlantic Metal Novelty Works, which was capitalized at $25,000.

NEWARK, N. J.—The Empire Metal & Refining Co., Inc., 31 Clinton street, recently was incorporated with $250,000 capital.

TRENTON, N. J. — The Pfinstag Auto Radiator Works has been incorporated with $25,000 capital and will locate at Elizabeth, N. J. The incorporators are George Werner, Joseph Strauss and Barney Nowich.

BALTIMORE.—The Continental Canning Co., Keyser building, has let the contract to Dietrich Bros., Pleasant and Post streets, for a metal-working plant.

BALTIMORE.—The Baltimore Smelting & Rolling Co. will build an addition to its plant here, 41 x 56 feet.

CHATTANOOGA, TENN.—The Mascot Stove Mfg. Co., White and Boyce streets, plans to build a 80 x 250-foot foundry.

CHATTANOOGA, TENN.—The Southern Foundry & Machine Co., capital $75,000, has applied for a charter and has purchased a site on which to erect a modern foundry. The incorporators of the company are William Cummings, J. H. Anderson, T. P. Shepherd, E. H. Williams and W. J. Cotter.

JACKSON, TENN.—The Southern Supply Co. has been formed with $40,000 capital, and has taken over

Government Inquiries

BIDS on the following equipment are desired by the navy department, bureau of supplies and accounts.

One 14-inch sensitive vertical drill, one 24-inch automatic knife grinder, one 14-inch variety saw, one each band saw, brazing clamp and saw setter, 3884, San Diego, Cal., April 22.

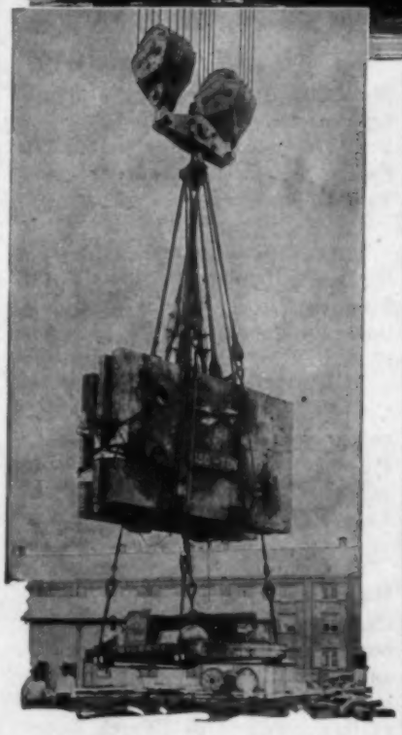
One motor-driven cold metal sawing machine complete, 3882, Norfolk, Va., April 29.

One portable wood-working machine with motor drive, complete for service, 3881, Norfolk, Va., April 29.

Two turret-track turning machines, complete with motor drive, 3861, Norfolk, Va., and Philadelphia, April 11.

Schedule numbers, dates of opening and places of delivery follow the specifications of the tools.

W-S-M



W-S-M
PONTOON CRANES

The ponderous Revolving Turret Pontoon Cranes built for the United States Navy by The Wellman-Seaver-Morgan Company are rendering great service in the Navy Yards. They should be equally valuable for our shipyards and harbors in solving all extraordinary marine lighterage problems such as the lifting of boats out of water for scraping and painting; the launching of moderate size boats; the placing of boilers in launched hulls; and the raising of small sunken crafts.

The Wellman-Seaver-Morgan Company specializes in cranes and hoists of all descriptions. Whether your problem requires a small Electric Hoist or a huge engineering undertaking like the Pontoon Cranes, our catalogue will be of interest to you.

THE WELLMAN - SEAVER - MORGAN COMPANY
CLEVELAND, OHIO

the mill supply department of the Southern Engine & Boiler Mfg. Co. Mack Morris is president of the company.

MEMPHIS, TENN.—The Russell Grader Co., Minneapolis, plans to construct a branch plant here for the manufacture of culverts. Mark Fenton, industrial commissioner of the chamber of commerce, is interested in the company.

NASHVILLE, TENN.—The Automotives Corp., capital $10,000, has been incorporated to manufacture engines, by Lewis McFarland, Henry Neel Jr. and others.

NEWTON, N. C.—Machinery for the manufacture of small buoys will be made by the United States Buoy Corp. recently formed here with $100,000 capital.

Central States Activities

APPLETON, WIS.—Tentative plans have been prepared for a bridge 769 feet overall over the Fox river. O. F. Weisberger is city engineer.

APPLETON, WIS.—The Langstadt-Meyer Co., manufacturer of farm lighting equipment and power systems, plans a machine shop and factory building at an estimated cost of $50,000. The company at present has general offices at Green Bay, Wis.

BERLIN, WIS.—The Schaefer Mfg. Co. plans a plant addition for the manufacture of boilers.

EAU CLAIRE, WIS.—The Hohmann-Nelson Co. has been organized by A. B. Hohmann, to manufacture recording instruments, etc. Part of the plant of the Eau Clair Mfg. Co. has been turned over to the new company pending the erection of a plant by the latter. A. J. Nelson is secretary and treasurer.

FON DU LAC, WIS.—The National Drop Head Projector Co., incorporated with a capital of $200,000, is having plans prepared for a 2-story plant, 48 x 100 feet, which when completed will be devoted to the manufacture of motion picture machines.

GREEN BAY, WIS.—The Conradson Machine Tool Co. has awarded a contract for a machine shop, 190 x 190 feet, estimated to cost $60,000.

JANESVILLE, WIS.—Plans are being finished for a plant for the Parker Pen Co.

JANESVILLE, WIS.—The General Motors Co. has awarded contracts for a tractor manufacturing plant, 40 x 436 feet, estimated to cost $40,000. This is the second unit of the plant to be awarded.

LA CROSSE, WIS.—The Miller Broom Co., 111 South Front street, will erect a manufacturing plant, 80 x 200 feet, at an estimated cost of $35,000. Albert L. Miller is president.

MARSHFIELD, WIS.—Krasin Bros. have been awarded the contract for a junior high and vocational training school, which will be erected at a cost of $100,000. P. J. Kraus is school board secretary.

MENASHA, WIS.—The U. S. Tractor Co., recently organized, will build a plant costing $50,000.

MILWAUKEE.—Plans are being drawn by Engineer C. P. Bossett, car of the Pfister & Vogel Co., for a power plant, estimated to cost $150,000.

MILWAUKEE.—The Corrugated Tank Machine Co. recently filed articles of incorporation with $5000 capital. The incorporators are F. Thill, Paul Stendel and H. F. Friedrich.

MILWAUKEE.—The Milwaukee-Western Fuel Co., 1400 Wells building, will erect a garage and machine shop, 30 x 133 feet, at an estimated cost of $25,000.

MILWAUKEE.—Tentative plans are being prepared for a new plant for the Milwaukee Tank Works, 851 Kinnickinnic avenue. The present plant of the company recently was badly damaged by fire.

MILWAUKEE.—The B. Hoffman Mfg. Co., 257 Sixth street, has awarded a contract to H. Schmitt & Son, 422 East North avenue, for a 3-story warehouse, 40 x 96, to replace a building recently damaged by fire. The company operates a machine shop and foundry.

MILWAUKEE.—The Bayley Mfg. Co., 732 Greenbush street, manufacturer of fans and blowers, recently increased its capital from $140,000 to $250,000. Although no definite decision has been made, the company has been planning the construction of a foundry, tentative plans having been prepared some time ago.

PORTAGE, WIS.—H. V. Tennant, city engineer, is receiving estimates for a 150-horsepower boiler for the city waterworks pumping station.

RACINE, WIS.—The Malbohm Motor Co., Clark and Fifteenth streets, will build a 1-story plant, 80 x 600 feet, to cost $90,000.

SHEBOYGAN, WIS.—Plans are being prepared for a 67-foot steel bridge at Eighth street, to cost $60,000. C. A. Boley is city engineer.

WASHBURN, WIS.—The Anchor Shipbuilding Co. has been reorganized and a new board of directors elected. The officers of the company are George F. Morgan, William Messenger and W. Gunn Smith. Six marine ways, a structural and boiler shop, a machine shop and other buildings will be erected.

WAUSAU, WIS.—The Lull Truck Co., now being organized, plans to occupy a factory building, 50 x 150 feet, which later will be equipped with a heating plant, machine tools, and other equipment. James A. Bell is general manager.

DETROIT.—Architect Otto E. Kavieff, 712 Empire building, is drawing plans for a foundry. The name of the owner has been withheld.

DETROIT.—The Hudson Motor Co., 2901 East Jefferson avenue, plans a factory building, 1-story, 102 x 121 feet, estimated to cost $25,000.

DETROIT.—The American Machine Products Co., J. C. Cook, secretary, 30 Twenty-first street, is having plans drawn for a 1-story plant, 48 x 100 feet.

DETROIT.—Announcement has been made that the Detroit Seamless Steel Tubes Co. recently purchased a 60-acre site for a plant to be erected within a year.

DETROIT.—Within the next 60 days the Acme Fancy Wire Works, Canfield avenue, will be in the market for a shear, a punch and a crumping machine.

DETROIT, MICH.—The Central Forge Co. will build a steel forge shop and a heat treating shop, each two stories, 70 x 302 feet. Smith, Hynchman & Grylls, Washington Arcade, are architects.

DETROIT.—Frank K. Vaughn and Fred Mueller, Hamilton, O., have the contract to erect a tractor plant at Hamilton, O., for the Fordson Tractor Co. The work is to be completed by June 1.

DETROIT.—The General Motors Corp. is reported to have purchased a block on West Grand boulevard, as the site for a 16-story automobile parts warehouse and showroom. The erection of several factory units on the company's Holbrook avenue property also is reported.

FLINT, MICH.—The Marvel Carburetor Co., 619 Null street, has awarded contracts for a factory addition, 1-story, 20 x 68 feet.

GRAND RAPIDS, MICH.—Bids have been taken for the construction of a factory building, 100 x 150 feet for the Grand Rapids Brass Co., Shawmut street and Front avenue.

HOLLAND, MICH.—The Brown Wall Machine Co. contemplates a foundry addition, 70 x 80 feet.

HUDSON, MICH.—The plant of the Hardie Mfg. Co., manufacturer of spray pumps, etc., suffered a loss estimated at $70,000, by a recent fire.

JACKSON, MICH.—The Frost Gear & Forge Co. is having plans prepared for an addition, 72 x 150 feet.

LANSING, MICH.—The New Way Motor Co. is reported preparing for plant extension. Harry J. Sproat is secretary.

MT. CLEMENS, MICH.—The Mt. Clemens Foundry Co. has started the erection of a main foundry building, 160 x 250 feet. The plant is controlled by the General Motors Corp.

OWOSSO, MICH.—A company is being formed here

Business Changes

HERMAN A. HOLZ, metallurgical engineer and manufacturer of metallurgical and magnetic testing apparatus, has removed his office and laboratories from the Metropolitan tower, 1 Madison avenue, New York, to the Pullman building, 17 Madison avenue. His laboratories which contain the most modern equipment for experimental heat treating, hardness and impact testing, micro and micro-photographic investigation of metal sections, etc., will occupy the entire third floor of the Pullman building.

* * *

The Phoenix Iron Works Co., Meadville, Pa., has opened an office in New York City at 619 Fifth Avenue building. It is in charge of J. E. Kindregan and Paul C. Rodgers.

* * *

The National Steel Rail Co., St. Louis, consolidated with the Standard Steel Rail & Steel Co., that city on April 1.

* * *

The W-H-Y Electric Equipment Co., Milwaukee, has changed its corporate style to W. Frank Horn Co., Inc. W. Frank Horn is president and treasurer, and Lafayette Yakes is secretary.

* * *

The W. A. Jones Foundry & Machine Co., Chicago, Ill., manufacturers of gear speed reducers, power transmission machinery, and special foundry and machine shop equipment, has opened an eastern office at 30 Church street, New York, under the charge of Lemuel C. Biglow, who was formerly engaged in a similar capacity for a number of years with the Morse Chain Co., Ithaca, N. Y.

* * *

New quarters for the Detroit office of the Interstate Iron & Steel Co. have been established recently at 505 Real Estate Exchange building, in charge of R. B. Dutch.

OUR LONDON HOUSE
FOUNDED IN 1819

Shipping Steel Products to all parts of the world has been our business for the past century.

The insight into the world's steel markets we have thus gained over a long period of years, and our intimate knowledge of export conditions, is at the service of our friends everywhere.

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ROWNSON, DREW & CLYDESDALE, Inc.

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FACTORY:
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SAN FRANCISCO, American National Bank Building
LONDON, E. C., 225 Upper Thames Street
GLASGOW, 104 West George Street
BELFAST, 16 Donegal Square South
PARIS, 22 Rue Bergere

Representatives in

BARCELONA
BARRANQUILLA
BATAVIA
CALCUTTA
DE BILT
GUADELOUPE
HONGKONG
MARTINIQUE
ST. KITTS
ST. JOHNS
SANTO DOMINGO
SHANGHAI
SINGAPORE
SYDNEY

by Benjamin Shaffer and Clayton Watson, to manufacture a device for automobile steering gears.

PONTIAC, MICH.—James McGregor, of the Pontiac Machine & Foundry Co. recently purchased a site on which he plans to erect a new machine shop and foundry.

PONTIAC, MICH.—The plant of the Hess-Pontiac Spring & Axle Co. recently was damaged by fire. The loss was estimated at $150,000. The plant will be rebuilt.

SAGINAW, MICH.—The Nelson Motor Truck Co. plans expansion. A 20-acre site adjoining its plant has been purchased.

ST. JOSEPH, MICH.—The Fay-Kultgen Foundry Co. has started on additional plant expansion.

BRYAN, O.—A new company, The Bryan Washing Machine Co. has been incorporated to manufacture electric washing machines, with $50,000 capital, and will establish a plant here. The company was incorporated by E. C. Carroll, N. W. Carroll and Harry Huffman.

CANTON, O.—The Canton Rim Co., which was recently incorporated with $100,000 capital, has purchased a site and plans a plant for the manufacture of automobile rims. Charles Doerscheck is manager.

CINCINNATI.—The Ideal Metal Co., 1212 West Liberty street, has increased its capital and plans to install new brass furnaces and purchase other equipment.

CLEVELAND.—The Grabler Mfg. Co., 6565 Broadway, steel specialties, plans the construction of a warehouse addition, 90 x 100 feet.

CLEVELAND.—The Stevenson Nut & Bolt Co. recently was incorporated with $5000 capital, by Warwick J. Hayes and others.

CLEVELAND.—The Union Rolling Mills Co. has had plans drawn for a scale house, 1-story, 30 x 80 feet.

CLEVELAND.—The Cleveland Graphite Bronze Co. recently was incorporated with $200,000 capital, by A. W. Lueke, J. J. McIntyre, C. S. Miller and Charles Higley, Leader-News building.

CLEVELAND.—The Accurate Machine Co., Whitney Power block, has taken out a permit to erect a machine shop, 160 x 180 feet, at an estimated cost of $60,000.

CLEVELAND.—L. H. Sherer, 1390 East Fortieth street, plans the erection of a machine shop addition, 32 x 63 feet. F. J. Coughlin, 709 Union building, has the contract.

CLEVELAND.—Preliminary plans are being made for a new plant for the Cuyahoga Galvanizing & Mfg. Co., 1280 East Fifty-ninth street. Entire cost is estimated at $40,000.

CLEVELAND.—The W. S. Bidle Co., 1411 East Forty-fifth street, has a permit to erect an addition to its plant, 1-story, 50 x 100 feet. The contract has been let to the Sam W. Emerson Co. An addition to the machine shop, 40 x 90 feet will also be erected.

CLEVELAND.—It has been announced that the Electric Vacuum Cleaner Co., affiliated with the General Electric Co., will take over the plant of the Frantz-Premier Co., Ivanhoe road, East Cleveland, and the plant will be devoted to the manufacture of various types of vacuum cleaners. At present the plant is equipped with a machine shop, foundry and power house, but according to a report, the capacity of these will be enlarged. Julius Tuteur heads the company.

COLUMBUS, O.—The Columbus Plow Mfg. Co. recently was incorporated with $25,000 capital by B. F. Smith, A. M. Smith and W. H. Jones.

COLUMBUS, O.—The Burton Engineering & Machinery Co. recently increased its capital from $150,000 to $500,000.

NEWARK, O.—The Newark Stamping & Foundry Co. plans a new building to accommodate equipment recently purchased from the May-Fiebeger Co., Akron. The company plans to increase its capital to $150,000 and will engage in the manufacture of furnaces.

DECATUR, ILL.—The Decatur Malleable Iron Works will erect a new shop building.

Throughout the West

ABILENE, TEX.—The Gulf Well Machinery Mfg. Co. will expend $150,000 for extensions and improvements.

TULSA, OKLA.—A permit to do business in Texas has been granted the Mount Cooper Boiler & Iron Co., which is capitalized at $500,000.

BEATRICE, NEBR.—The Beatrice Steel Tank Mfg. Co. has announced it is still in the market for equipment. The company manufactures steel tanks and other sheet metal goods.

FT. LEAVENWORTH, KANS.—The State of Kansas, care Warden Fletcher, plans a stone mill, steel shop and broom factory, 100 x 200 feet, estimated to cost $40,000. The old plant recently was damaged by fire.

HUTCHINSON, KANS.—This city plans an artificial gas plant.

LEAVENWORTH, KANS.—A 1-story frame structure, used as steel and blacksmith shops at the federal prison here, recently was damaged by fire.

MISSOULA, MONT.—The Missoula Light & Water Co. is taking bids for a hydroelectric plant.

WALLACE, IDAHO.—The power plant of the Federal Mining & Smelting Co. recently was damaged by fire. The loss has been estimated at $20,000.

ADNA, WASH.—Bids will be received until April 7 by Lewis county commissioners for a 220-foot steel bridge over Chehalis river.

THE DALLES, OREG.—The state highway commission, M. Bennett, division engineer, plans a bridge over the Deschutes river at an estimated cost of $100,000.

FRESNO, CAL.—The Flower Mfg. Co., Inc., recently was incorporated with $10,000 capital, to manufacture automobile accessories, by W. A. Flowers, C. F. Buckland and others. The company is having dies, tools and other equipment made for the manufacture of its products, and later on plans to erect a plant. Its office is located at 1061½ Mariposa street.

VENTURA, CAL.—The Ventura Mfg. Co. plans three new buildings, a machine shop 75 x 220 feet, forge shop 75 x 220 feet and an assembling plant 50 x 220 feet. A foundry and pattern shop will be erected later. W. J. Saunders, Laughlin building, is architect.

Business in Canada

RENFREW, ONT.—The Renfrew Electric Products Co. has been incorporated with $500,000 capital, to take over the plant of the Renfrew Electric Mfg. Co. to manufacture machinery, etc. The incorporators are Stephen H. Murphy, John A. Jamieson, Thomas A. Low and others.

BRANTFORD, ONT.—The Hoag Engine Co., Ltd., has been incorporated to manufacture machinery, etc., with $100,000 capital, by Phillip H. Secord, Roy E. Secord and Henry P. Hoag.

GRIMSBY, ONT.—The Grimsby Steel Furniture Co., Ltd., has been incorporated to make steel furniture, etc., with $60,000 capital, by William J. McCoy, room 403, 69 Yonge street, and others.

GUELPH, ONT.—The Wendigo Power Co., Ltd., has been incorporated to build and operate electric light, heat and power plants with $1,000,000 capital. The incorporators are Charles L. Dunbar, Leo W. Goetz, John Sutherland and others.

HAMILTON, ONT.—The Neptune Motor Co., New York, will erect a branch plant here.

KITCHENER, ONT.—The Four-Wheel Drive Auto Truck Co., Clintonville, Wis., has purchased a 10-acre site here on which to erect a branch plant.

OSHAWA, ONT.—The McLaughlin Motor Car Co., Ltd., has been incorporated to manufacture automobiles, engines, tools, etc., with $10,000 capital, by William S. Morlock, 85 Bay street, and others.

OSHAWA, ONT.—The Chevrolet Motor Co. of Canada, Ltd., has been incorporated to manufacture automobiles, engines, motors, etc., with $10,000 capital, by William S. Morlock, 85 Bay street, and others.

SARNIA, ONT.—The H. H. Robertson Co., Ltd., has been incorporated to manufacture iron, steel, metals, etc., with $200,000 capital. Harold H. Robertson, Sewickley, Pa., Charles MacKenzie and Robert J. Towers are the incorporators.

TORONTO, ONT.—The Dominion Electric Switch Box Co., 10 Croft street, will build a 3-story building at an estimated cost of $15,000.

TORONTO, ONT.—The Anglo Canadian Metals, Ltd., has been incorporated with $40,000 capital, by John A. MacIntosh, 70 Forest Hill road, and others.

TORONTO, ONT.—The A. M. Castle Engineering Co., Ltd., has been incorporated to manufacture machinery, etc., with $275,000 capital, by Walter G. Hammond, room 11, 24 King street west, and others.

TORONTO, ONT.—Maldaver & Co., Ltd., have been incorporated to manufacture metals, etc., with $100,000 capital, by Andrew Dods, Bank of Hamilton building, and others.

TORONTO, ONT.—Hardinge Bros. of Canada, Ltd., have been incorporated to manufacture machinery, etc., with $40,000 capital, by John F. MacGowan, 68 Bartlett avenue, and others.

TORONTO, ONT.—The Pressed Metals Co. of Canada, Ltd., 112 Adelaide street east, plans considerable expansion, and is reported contemplating erecting a branch plant at Detroit.

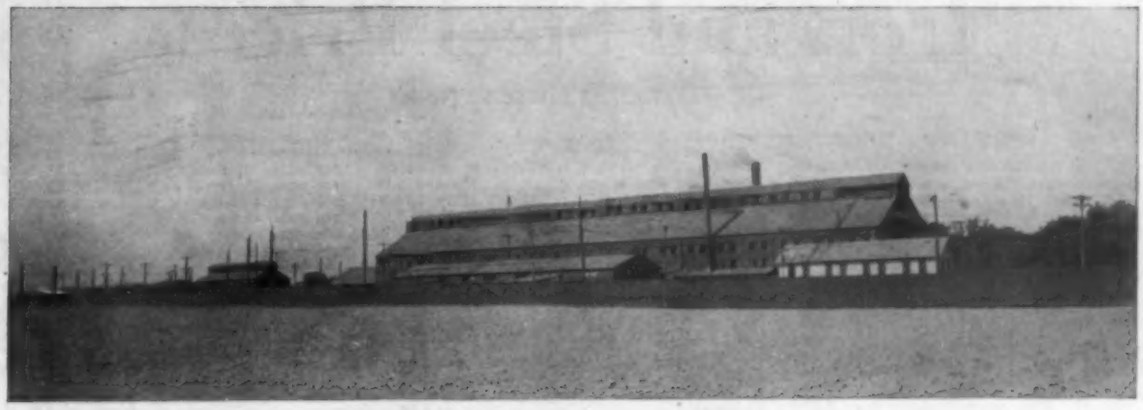
TORONTO, ONT.—Fire which broke out in the plant of the Toronto Metal & Waste Co., 146 Niagara street, recently caused a loss estimated at $18,000.

TORONTO, ONT.—The Norton Tool & Machine Co., Ltd., 360 Pape avenue, was incorporated with $40,000 capital to engage in the manufacture of dies, jigs, etc. Later this line will be extended. Henry A. Ritchie is president.

TORONTO, ONT.—The Acme Electro-Plating Co., Ltd., recently was incorporated to take over the business of Walter E. Lewis, and plans to increase the plant. The company will be in the market shortly for several presses.

TORONTO, ONT.—The National Safety Oil Burner Co., Ltd., has been incorporated to take over the business of the National Safety Burner Co. The company is capitalized at $40,000 and William W. Scott, Morely C. Pritchard, 1661 Dufferin street, Andrew B. Law, 12 Appleton avenue, and others are the incorporators.

WINDSOR, ONT.—The Canadian Collapsible Rim Co. has been incorporated to manufacture rims, etc., with $500,000 capital. The incorporators are John C. Campbell, Sydney S. Anderson and Frederick C. Kerby.



Electric GG Steels

SPRING STEEL ROLLED BILLETS

Forged and Heat Treated

DIE BLOCKS

PISTON RODS

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: 832 Dime Bank Building

Say you saw it in THE IRON TRADE REVIEW

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ore

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 per cent iron	$6.65
Mesabi Bessemer, 55 per cent iron	6.40
Old range non-Bess., 51½ per cent iron	5.90
Mesabi non-Bess., 51½ per cent iron	5.75

Warehouse Prices

Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.95c
Steel bars, New York	3.37 to 3.415c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.32c
Iron bars, Buffalo	4.70c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.93c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	4.30c
Iron bars, New York	3.37 to 3.415c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47 to 3.515c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.37c
Shapes, Buffalo	3.42c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.62c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67 to 3.715c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.57c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	4.47c
No. 10 blue anl., Buffalo	4.52c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.37c
No. 28 black sheets, Cleveland	5.40c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.43c
No. 28 black sheets, St. L.	5.30c
No. 28 black sheets, St. Paul	5.595c
No. 28 black sheets, Buffalo	5.32c
No. 28 galv. sheets, Chicago	6.72c
No. 28 galv. sheets, Cleveland	6.62c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galvanized, Detroit	6.65c
No. 28 galv. sheets, St. L.	6.79c
No. 28 galv. sheets, Buffalo	6.67c

Iron and Steel Scrap

(Prices in Gross Tons)

STEEL WORKS USE

Bundled sheets, Cincinnati	$ 9.00 to 9.50
Bundled sheets, Pittsburgh	12.50 to 13.50
Bundled Sheets, Cleveland	9.50 to 10.00
Bundled sheets, Buffalo	11.50 to 12.00
Bundled sheets, eastern Pa.	13.00 to 14.00
Boiler plate, cut, No. 1, Chicago	13.00 to 14.00
Boiler plate, cut, No. 1, St. Louis	11.00 to 11.50
Frogs, switches, guards, St. Louis	16.00 to 16.50
Frogs, switches, guards, Chicago	16.50 to 17.00
Heavy melting steel, Pittsburgh	15.50 to 16.50
Heavy melting steel, Buffalo	14.50 to 15.00
Heavy melting steel, Chicago	16.50 to 17.00
Heavy melting steel, Cleveland	15.00 to 15.50
Heavy melting steel, Cincinnati	13.50 to 14.00
Heavy melting steel, east. Pa.	15.50 to 16.00
Heavy melting steel, N. Y. (Deal.)	12.25 to 12.50
Heavy melting steel, St. L.	15.00 to 15.50
Heavy melting steel, Birmingham	11.00 to 13.00
Baled sheets, Cleveland	13.50 to 14.00
Baled sheets, Pittsburgh	13.50 to 14.50
Baled sheets, Chicago	12.50 to 13.00
Knuckles, couplers, Chicago	18.50 to 19.00
Knuckles, couplers, St. Louis	15.50 to 16.50
Low phos. steel, Buffalo	20.00 to 21.00
Low phos. steel, Pittsburgh	22.50 to 23.50
Low phos. crops, eastern Pa.	20.00
Low phos. guaranteed E. Pa.	20.00
Shoveling steel, Chicago	16.00 to 16.50
Shoveling steel, St. Louis	14.00 to 14.50
Steel rails, short, Cleveland	18.00 to 19.00
Steel rails, short, Chicago	18.00 to 18.50
Steel rails, short, St. Louis	16.00 to 16.50
Steel rails, old, Birmingham	12.00 to 13.00
Stove plate, Chicago	18.00 to 18.50
Stove plate, Cincinnati	12.00 to 12.50
Stove plate, St. Louis	16.50 to 17.00
Stove plate, N. J. pts. (Dealers')	16.50 to 17.00
Stove plate, Birmingham	13.00 to 14.00
Stove plate, Buffalo	17.00 to 18.00
Stove plate, eastern Pa.	18.00 to 20.00
Stove plate, Cleveland	16.00 to 17.00
Stove plate, Pittsburgh	16.00 to 16.50
Heavy breakable cast, Pgh.	16.50 to 17.50

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.30
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$3.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	3.50
Milwaukee	.80
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	37.0 cents
Philadelphia	34.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	37.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.95

IRON MILL USE

Busheling, No. 1, Cleveland	14.50 to 15.00
Busheling, No. 1, Buffalo	13.00 to 14.00
Busheling, No. 1, Pittsburgh	15.00 to 15.50
Busheling, No. 1, Cincinnati	14.50 to 15.00
Busheling, No. 1, Chicago	16.00 to 16.50
Busheling, No. 2, Chicago	11.00 to 12.00
Busheling No. 1, St. Louis	15.50 to 16.00
Cast borings, New York (Dealers')	10.00
Cast borings, eastern Pa.	13.00 to 14.00
Cast borings, Buffalo	11.00 to 12.00
Cast borings, Cleveland	10.00 to 10.50
Cast borings, Cincinnati	7.50 to 8.00
Cast borings, Pittsburgh	11.50 to 12.50
Cast borings, Birmingham	6.50 to 7.00
Cast borings, Chicago	10.50 to 11.00
Cast borings, St. Louis	9.00 to 9.50
City wrought, long N. Y. (Deal'r)	15.00 to 16.00
Cut forge, Chicago	17.00 to 17.50
Forge No. 1, eastern Pa.	13.00 to 14.00
Forge flashings, large, Cleveland	8.50 to 9.00
Forge flashings, small, Cleveland	13.25 to 14.50
Grate bars, Buffalo	21.00 to 22.00
Grate bars, Cleveland	16.00 to 17.00
Grate bars, N. J. pts. (Dealers)	16.50 to 17.00
Iron axles, Pittsburgh	26.00 to 27.00
Iron axles, Cincinnati	22.50 to 23.00
Iron axles, Cleveland	28.00 to 29.00
Iron axles, Chicago	32.00 to 32.50
Iron axles, eastern Pa.	nominal
Iron axles, St. Louis	27.50 to 28.00
Iron axles, Buffalo	23.00 to 24.00
Iron rails, Chicago	21.00 to 22.00
Iron rails, Buffalo	21.00 to 22.00
Iron rails, Cincinnati	21.00 to 22.00
Iron rails, St. Louis	20.00 to 20.50
Iron rails, Cleveland	23.00 to 24.00
Machine turnings, Cincinnati	7.50 to 8.00
Machien turnings, Cleveland	8.00 to 8.50
Machine turnings, Buffalo	8.50 to 9.50
Machine turnings, N. Y. (Dealers')	8.25 to 8.50
Machine turnings, Pittsburgh	10.50 to 11.50
Machine turnings, east. Pa.	11.50 to 12.50
Machine turnings, Birmingham	6.50 to 7.50
Machine turnings, Chicago	7.25 to 7.75
Machine shop turnings, St. Louis	8.50 to 9.00
Pipes and flues, Cleveland	12.00 to 13.00
Pipes and flues, Chicago	14.50 to 15.00
Pipes and flues, St. Louis	12.50 to 13.00
R. R. mach. cast, No. 1, Buffalo	21.00 to 22.00
R. R. wgt. No. 1, Buffalo	27.00 to 28.00
R. R. wrgt. No. 1, east. Pa.	21.00 to 22.00
Railroad wrgt., No. 1, Cincinnati	18.00 to 18.50
Railroad wrgt., No. 1, Cleveland	16.50 to 17.25
R. R. wrought, No. 1, Pittsburgh	18.00 to 19.00
Railroad wrgt., No. 2, Chicago	17.00 to 17.50
Railroad wrought, No. 1, Chicago	18.50 to 19.00
R. R. wrought, No. 1, Birmingham	12.00 to 13.00
No. 1 yard wrought, eastern Pa.	18.00 to 19.00
No. 1 busheling wrgt., east. Pa.	14.00 to 15.00
Sheet bar crops, Pittsburgh	23.00 to 24.00
Railroad wrgt., No. 1, St. Louis	16.50 to 17.00
Railroad wrgt., No. 2, St. Louis	16.00 to 16.50
Wrought pipe, Buffalo	13.00 to 14.00
Wrought pipe, east. Pa.	17.50 to 18.50
Wrought pipe, ungraded, east. Pa.	11.00 to 12.00

IRON OR STEEL WORKS USE

Axle turnings, Cleveland	$12.00 to 13.00
Axle turnings, Buffalo	13.00 to 14.00
Heavy axle turnings, east. Pa.	12.00 to 13.00
Heavy axle turnings, Pitts.	13.00 to 14.00
Shafting, New York (Dealers')	19.00 to 20.00
Shafting, east. Pa.	23.00 to 25.00
Shafting, St. Louis	18.00 to 18.50
Steel car axles, Birmingham	18.00 to 19.00
Steel car axles, Pittsburgh	25.00 to 26.00
Steel car axles, N. Y. (Dealers')	22.00 to 23.00
Steel car axles, Buffalo	23.00 to 24.00
Steel car axles, Cleveland	26.50 to 27.50
Steel car axles, East. Pa.	nominal
Steel car axles, Chicago	26.50 to 27.00
Steel car axles, St. Louis	22.50 to 23.00

IRON FOUNDRY USE

Car wheels (iron), Pittsburgh	22.00 to 23.00
Car wheels (steel), Pittsburgh	20.00 to 21.00
Car wheels, east. Pa.	23.00 to 24.00
Car wheels, Buffalo	21.00 to 22.00
Car wheels, Chicago	20.00 to 21.00
Car wheels, St. Louis	20.50 to 21.00
Car wheels, Birmingham	12.00 to 13.00
Car wheels, Cleveland	17.00 to 18.00
Tram car wheels, Birmingham	16.00 to 17.00
Cast, No. 1, Birmingham	19.00 to 20.00
Cast, No. 1, cupola, east. Pa.	22.00 to 23.00
Cast, No. 1, Cleveland	22.00 to 23.00
Cast, No. 1, Cincinnati	17.00 to 17.50
Cast, 1, machy., N. Y. (Dealers')	21.00 to 22.00
Cast, 1, heavy, N. Y. (Dealers')	20.00 to 21.00
Cast, No. 1, Chicago	23.00 to 24.00
Cast, No. 1, Pittsburgh	22.00 to 23.00
Cast, No. 1, St. Louis R. R.	21.50 to 22.00
Malleable, Cincinnati	15.00 to 15.50
Malleable, Cleveland	16.50 to 17.00
Malleable, Buffalo	17.00 to 18.00
Malleable, Pittsburgh	13.00 to 15.00
Malleable, East. Pa.	nominal
Malleable, cupola, East. Pa.	nominal
Malleable, railroad, Chicago	18.50 to 19.00
Malleable, agricultural, Chicago	17.50 to 18.00
Malleable, railroad, St. Louis	15.00 to 15.50
Malleable, agricultural, St. Louis	11.00 to 11.50

MISCELLANEOUS USES

Boiler punchings, Chicago	19.00 to 20.00
Reroll. rails, 5 ft. and over, Pitts.	19.00 to 20.00
Reroll. rails, 5 ft. and over, Chi.	17.50 to 18.00
Reroll. rails, 5 ft. and over, E. Pa.	17.00 to 18.00
Reroll. rails, 5 ft. and over, St. L.	16.00 to 17.00
Reroll. rails, 5 ft. or over, Cleve.	15.00 to 16.00
Rerolling rails, long, Birmingham	37.50 to 38.50
Locomotive tires, Chicago	20.00 to 21.00
Locomotive tires, St. Louis	15.50 to 16.00